



# Maine Drilling & Blasting

## EMERGENCY PROCEDURES -- PERSONAL INJURY/PROPERTY DAMAGE

All employees are to follow company policies and procedures for handling of emergencies in the event of an accident or incident involving hazardous materials.

### PROCEDURES:

When handling or working with hazardous materials these procedures will be followed at all times:

#### Gas/Arc Welders:

- Fire extinguishers will be available on all operations.
- All cylinders or bottles will be handled in accordance with OSHA and AHSL standards.
- Cylinders
  - Transported in vertical position
  - Secured or chained to prevent tipping
  - Caps installed when not in use
  - O will not be stored with any other gas including inert gases. O requires 20' distance from other gases in storage or non-combustible barrier separating them. (I.e. transit, asbestos, board, metal or 5/8" minimum wall board).
- Frames of all Arc welding/cutting machines shall be grounded.
- All cables shall be completely insulated and flexible -- capable of handling maximum current requirements.
- Flash shields will be used whenever possible.
- Eye protection will be used by welder/cutter and helper.

#### Explosives:

- Fire extinguishers will be available on all operations.
- No smoking, matches, flames or spark -- producing devices or firearms within 50' of any explosives or flammable material.
- Do not throw or drop explosives.
- Keep types and sizes together.
- Store cases flat, topside up, code date out.
- Stack to avoid possibility of collapse.
- Keep boxes closed.
- Store only explosive materials (no tools, tires, etc.).

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- Store detonators separately.
- Remove oldest stock first.

VIOLATIONS:

Violation of any of the above could result in disciplinary action per company  
Noncompliance Policy



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## EMERGENCY PROCEDURES

All employees are to follow company emergency policies and procedures for personal injury/property damage in the event of an accident or incident involving hazardous materials

### SPILL CLEAN-UP PROCEDURES-

- Identify the type of material spilled.
- Take immediate action to contain the spill, stop the flow or discharge, etc.
- Contact the Corporate Office and provide information on location, type, amount of spill and all emergency actions taken to contain the spill.
- Stay with the spill until it is completely cleaned-up or have been relieved by a company officer/manager.
- Take pictures if possible.
- Record all events occurring before, during and after the spill including DEP contact if required.

### DEP CONTACT PROCEDURES-

#### DEP EMERGENCY #'S

MAINE	AUGUSTA	800-452-1942
VERMONT	MONTPELIER	800-641-5005
MASSACHUSETTS	BOSTON	617-556-1133
		888-304-1133
NEW HAMPSHIRE	CONCORD	603-271-3503
RHODE ISLAND	PROVIDENCE	401-222-3070
CONNECTICUT	HARTFORD	860-424-3338
NEW YORK	ALBANY	518-457-7362

The Blaster/Foreman must contact DEP directly whenever there is a delay in contacting the Corporate Officer. When direct contact with DEP is required:

- Provide information on location, type, and amount of spill.
- Identify the Safety Specialist and provide telephone number for him to the DEP.
- Stay with the spill until it is completely cleaned up or have been relieved by a

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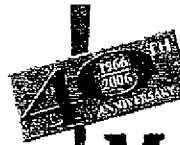
**VIL\_RESP03953**

- company officer/manager
- Cooperate with DEP Personnel and other official responders. Provide appropriate information to help minimize any health or environmental exposures.

VIOLATIONS-

Violations of this policy will be subject to disciplinary action per company Compliance Policies.





# Maine Drilling & Blasting

## HAZARDOUS MATERIALS POLICY

A Hazardous Materials Policy has been developed to assist the Company in its efforts to eliminate or reduce personal injury and property loss and to demonstrate public responsibilities.

*To assure compliance with regulatory and statutory requirements, each office will be provided with a copy of:*

- Federal Motor Carrier Safety Regulations Pocketbook.
- NFPA #495 Code for the Manufacturer, Transportation and Use of Explosive Material.
- Copies of State Regulations.
- OSHA Manual
- MSDS Manual

*The Company Hazardous Materials Policy includes procedures for:*

- Gas Welding
- Arc Welding
- Explosives Handling
- Emergency Procedures

The Hazardous Materials Policy is subject to all Company safety and emergency policies and procedures.

*The Hazardous Materials Policy requires that:*

- Hazardous materials data lists be available at all job sites and offices. This list is to contain the types of hazardous materials being used, the product manufacturer and an emergency # for the product manufacturer.
- Any accident involving hazardous materials that occurs, must be recorded and reported.
- All employees handling hazardous materials be trained in the proper handling of hazardous materials.
- All hazardous materials be clearly marked and rated according to the National Fire Protection Association and regulatory authorities.
- All job site employee be trained in Company hazardous materials procedures and are to follow Company emergency policies in the even of an accident/incident.

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## COMPANY RESPONSIBILITIES

*The Company will provide for:*

- Education and training of all employees in procedures pertinent to hazardous materials.
- Hazardous materials data lists for posting at all job sites.
- All necessary forms for purposes of documentation and compliance with reporting requirements.
- Telephone #'s and locations of manufacturers and emergency medical care providers.

## EMPLOYEE RESPONSIBILITIES

Division Managers and Safety Engineers are responsible for training employees in hazardous materials procedures.

*Safety Engineers, Supervisors and Blaster Foremen are responsible for providing:*

- All job site personnel with the job site location of the hazardous materials data list
- All job site personnel with directions to established health care providers and the nearest emergency health care provider.

Supervisors and Blaster Foremen are responsible for completing an investigation and submitting a Loss Control Report for any incident/accident involving hazardous materials.

*All employees required by statute must:*

- Participate in hazardous materials training sessions.
- Stay current on regulatory requirements involving hazardous materials.
- Request assistance from Safety Engineers if they are unsure of standards, regulations, etc. of hazardous materials.



# Maine Drilling & Blasting

## HAZARDOUS MATERIALS SPILL POLICY

All on and off site work areas are subject to the control of the Federal and State DEP regulations. There are penalties and fines for regulatory noncompliance for employers and employees. Standards, procedures and reporting requirements must be followed.

### *COMPANY RESPONSIBILITIES*

The Company will provide for:

- Education and training of employees in DEP regulations and requirements for hazardous material spills.
- Maintain current information on regulatory requirements.
- Reporting of all spills and the delivery of a Spill Kit to the site.
- Telephone numbers and locations of DEP offices and Contact persons, if available

### *Employee Responsibilities*

- Division Managers and the Safety Department are responsible:  
For training employees in hazardous material spill procedures.  
And regulatory changes
- Division Managers and the Safety Department are responsible for:  
All documentation and follow-up activities and required Corrective action.
- Supervisors and Blaster-Foremen are responsible for completing  
An investigation and submitting an Incident Report.
- All employees are responsible for taking action to contain the spill immediately.
- All employees are to contact the Safety Department as soon as possible to report the spill.

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## BLAST VIBRATION EFFECTS ON WATER WELLS

David S. Bowling  
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### INTRODUCTION

Water is the single most abundant substance on this planet. It is alone one of the most important for without it all life would cease. While water is abundant, like most other natural resources, it is rarely distributed in a form convenient to our need.

Areas that are blessed with an abundant supply of fresh water generally prosper, while those that are not must import it to survive. In view of the absolute necessity for water, it is little wonder that people view any perceived threat to their water supply, either real or imagined, with great apprehension or outright hostility.

A significant portion of this country's water supply is derived from underground sources. These sources are typically tapped by wells. Within the continental United States, these wells produce from rock or soil formations that have been divided into ten distinct and separate regions, according to their controlling geologic units. (3)

Blast effects on structures have been studied extensively, and a substantial quantity of data have been collected and published on this subject. However, blast effects on water wells have not been studied extensively. A search for literature turned up two publications that directly addressed commercial blasting in relation to water wells and one of these has only recently been released to the public by the United States Bureau of Mines. (4)

The U.S.B.M. publication contains data obtained from a year long study recently completed in the coal fields of Pennsylvania, Ohio and West Virginia. (4) The other publication contains data pertaining to seismic exploration shooting conducted in eastern Montana. (1) The results of both these studies may be indicative of the inherent safety from blast effects enjoyed by wells, and the conclusions drawn from these studies may also be indicative of the results that would, and perhaps will, be obtained from similar studies made in other regions. However, it must be pointed out, that factual data obtained from research is still the best means of defining

charge weights and other limitations applicable to water well safety. Because of this fact, there is a strong need for additional data of the type presented in the recent U.S.B.M. study. (4)

Settling claims and disputes, by way of litigation, is becoming more and more prevalent in our society. With such a tendency, it becomes necessary that technical literature not only delineate the conditions under which water well damage may occur as a result of blasting operations, but it is equally important that the same literature point out the numerous ways that the performance of water wells may be affected by naturally occurring conditions, or by lack of proper maintenance.

It is the purpose of this paper to address some of the conditions under which water wells may be damaged as result of blasting operations. It is its further purpose to address claims for damages alleged to have resulted from blasting, but which cannot be supported. For this purpose, case histories have been drawn from the files of White Industrial Seismology, a company founded in 1951, by Harold H. White, which has continuously served the public in the field of blast vibration monitoring, and in the analysis of blast effects since that time.

Before discussing particular cadre histories, let us briefly consider some general background information pertaining to the science of hydrology and the occurrence of ground water.

## HYDROLOGY

Hydrology is the study of the earth's water. Central to the science of hydrology is the hydrologic cycle. The hydrologic or water cycle is the mechanism by which water is extracted from the oceans and other reservoirs, and is dispersed upon the land masses. In brief, the cycle can be described in three words: evaporation, transportation and precipitation.

The sun causes evaporation from the oceans and other bodies of water. The water vapor is transported, by way of the wind, to highest altitudes, where it moves out over the continents, forms into clouds, condenses, and falls back to the earth's surface as rain, snow or ice. An idealized version of the hydrologic cycle is illustrated in Figure #1.

It has been estimated that 1.1 trillion tons of fresh water are precipitated upon the continental lands each year. (3) It is the precipitation that provides the water for recharging the underground sources for wells.

## GROUND WATER

The term, "ground water," pertains to water that is contained within and below, the earth's surface. Water that falls from the atmosphere and percolates down through the soil makes up the largest portion of ground water. This is referred to as meteoric water. There is also two other sources of ground water. They are magmatic or juvenile water and connate water.

Magmatic water is derived from within the earth's interior. It is chemically formed from molten masses of rock and is typically associated with hot springs, geysers and other geothermal phenomena.

Connate water was originally stored in rock formations lying beneath ancient seas and lakes. Catastrophic or other types of uplifts entrapped this water. Connate water may be fresh, but more often it is salty. This type of water is typically associated with oil deposits and is an undesirable contaminant of ground water supplies. Both magmatic and connate water constitute a small but significant percentage of the earth's total ground water supply.

Ground water, in the earth, is divided into two distinct zones. They are : the vadose zone, or the zone of aeration, and the phreatic zone, or the zone of saturation. The vadose zone includes three subzones which are: 1) an area near the surface of the ground that contains soil moisture, 2) a mid zone that is percolation area, where moisture migrates downward, and 3) a bottom zone that is a capillary fringe area, where the down migrating water approaches the zone of saturation. The top of the phreatic zone is generally referred to as the water table. A generalized near-surface water section is illustrated in Figure #2.

The depth of the water table will vary widely. It is dependent upon the topography of the land, the type of soil and rocks that make up an area, and the quantity of rainfall that an area receives. Generally, the surface of the water table conforms to an area's topographic surface. The table's exact elevation, within a given area, will fluctuate with the change of the seasons and the quantity of rainfall available for recharge. The water table and its seasonal variations should always be considered in the construction of wells. The seasonal variation of the water table and a well that is properly placed in relation to this variation, is illustrated in Figure #2.

The water table occasionally intersects the surface of the ground at springs and streams. Some streams are fed by ground water and may transfer ground water from one area to another.

Streams are classed as, "effluent," if they take water from the ground and, "influent," if they give up water to the ground. (3)

The quantity of water that may be held and stored in a given area is highly dependent upon the porosity and permeability of the rock formations in that area. Rock formations that readily hold water and allow for its movement, due to their interconnected an open pore spaces are generally referred to as aquifer. Because of their joint patterns and solution cavities, limestones typically make good aquifers. On the other hand, clays and shales, due to their fine grained character, do not make good aquifers.

Sometimes conditions occur, within the vadose zone, that serve as a barrier to the downward migration of water. When these conditions occur, they are called perchments, or perched water tables. These perchments may be very small and inconsequential, or very large and substantial. When perchments are large they can serve as a significant source of water. Figure #3 illustrates an idealized perchment.

Water always flows from higher to lower levels until it reaches as state of equilibrium. Consequently, rainfall in one area may enter as aquifer and due to the hydraulic gradient, this water may flow for great distances.

When aquifers are overlain by an impermeable bed, such as shale, they are said to be confined. When wells penetrate confined aquifers, the well's level will stand above the top of the aquifer formation. When a confined aquifer dips significantly, and the hydraulic gradient is sufficiently great, wells in the aquifer will flow out upon the land's surface. This type of condition is referred to as an artesian system. In both confined and artesian systems, the level to which water will rise, in a well that is cased to a sufficiently high level, is known as the piezometric level. Figure #4 illustrates an idealized artesian aquifer where the piezometric level is portrayed as being above the ground surface.

Ground water conditions vary greatly from area to area and it is not uncommon, in some places, for wells located within a few hundred feet of each other to have vastly different production capacities. Unfortunately, one is not able to tell the exact subsurface conditions, or the quantity or quality of an area's water, until the drill has done its work.

Due to the constraints of this paper, the discussion of hydrology and ground water are necessarily simple and brief. However, many good texts are available on these subjects for those who wish to study them further.

### BLAST EFFECTS

When one considers the industrial operations that require explosives as an energy source, there are three basic ways that such operations are generally said to cause damage to a well or water system. They are;

- 1) A well could be damaged from the direct shock and vibration of a blast.
- 2) The water source may be diverted and thus diminish a well's producing capacity or perhaps rob it entirely.
- 3) The drilling and shooting could release contaminants into an aquifer and thus pollute the water supply.

Each of these damage possibilities will be discussed separately.

### DIRECT SHOCK AND VIBRATION

Blast effects on buried structures have always been considered to be less severe than the same blast effects on surface structures. Historically, the underground bunker has provided shelter from blast effects since the invention of gunpowder grenade. Almost everything that is to be protected from blasting or violent elements is typically placed underground. Drilled wells also enjoy a similar level of safety from ground shock.

Atomic testing has defined the limit for light damage to buried structures. The definition of light damage is given as a broken connection in a pipeline. Damages are shown to be confined to areas within a distance of three times the radius of the crater produced by an atomic explosion.

(2)

David Siskind has shown that damages to rock, within the immediate vicinity of blast holes, do not extend into rock mass for distances greater than 55 times the hole or charge radius.

(5) & (6)

In 1951, Harold White recorded in an underground mine, the seismic effects produced by six blastholes drilled in the surface above the mine. The recording position was 207-feet below the bottom of the shots. The blast holes contained 4.986 pounds of explosives detonated on three



millisecond delay periods. White was also able to show that the seismic amplitude underground was approximately 20 per cent of the surface amplitude at a similar distance. (7)

In 1957, White conducted studies of blast effects on an oil well and a pipeline, that were situated within an area of highly saturated and unconsolidated sediments. This study was initiated with the intent of determining the maximum charge weights that could be used near these facilities before damage occurred. The charges were standardized at 150 pound per hole and buried to a depth of 150 feet. Larger charges required firing two or more holes at the same time. This project eventually was terminated when blast loading exceeded the maximum levels that the oil well and pipeline were expected to receive and no evidence of damage had occurred.

Two seismograms from this 1957 study are shown in Figure #5. They depict the low frequencies that were generated by these shots. Note the fact that at a distance of 100 feet, 300 pounds of explosives was enough to completely overdrive the seismograph, but it was not enough to damage the pipeline.

In 1977 and 1979, this writer made measurements of the blast effects produced from four very large surface mine blasts. One seismic instrument used to monitor these effects was located approximately 400 feet underground, in a mine. Measurements obtained by underground instrument were approximately 40 per cent of the surface measurements recorded by instruments at similar scaled distances from the shots. All four tests were conducted in the same surface mining operation.

The United States Bureau of Mines' recently released study on Appalachian water wells is the only detailed scientific study available today that examines the specific history of wells located very close to mining areas. Four separate mining sites, each with several wells on their sites, were investigated during this study. (4)

The charge weight to distance relationships for shots fired at these sites ranged from a low of 27 pounds per delay, at 550 feet, for a scaled distance of 105.9, to 738 pounds per delay, at 64 feet, for a scaled distance of 2.4. (4) The maximum resultant peak particle velocity measured at the well head in question was 0.04 inches per second for the 27 pounds per delay shot and 5.02 inches per second for the 738 pounds per delay shot. (4) A number of seismic measurements were taken at the bottom of wells during this study. However, no measurements were apparently taken there for the maximum and minimum scaled distance shots.

No reported instance of shock or vibration damage to liners, seals or pumping equipment occurred during the Appalachian study. However, at one site there was some surface damaged caused by flying debris that was produced as the result of a close blast. (4)

All of the down hole measurements of the seismic effects were lower than corresponding measurements taken at the surface. The down hole measurements were 9 to 92 percent lower than the surface measurements. (4) The only instances where the bottom hole measurements exceeded 50 percent of the surface measurements occurred when blasting for a coal seam was extremely close to the wells and the elevation of the shot and the wells was similar. In no case did the bottom hole measurement equal the measurement at the surface.

The only reported instance of possible shock effect occurred near the end of this U.S.B.M. study, when the researchers were unable to get their sounding probe back to full depth in one unlined well, due to a bridging effect. Between soundings, this well had withstood five blasts, at distances ranging from 70 to 150 feet and charge weights per delay ranging from 250 pounds to 766 pounds. (4) These shots were scattered over a four month period during which only one of the four wells at this site experienced this bridging effect. (4)

The maximum peak particle velocity measurements taken at the surface during this time period ranged from 0.78 to 4.43 inches per second. (4) One measurement taken at a distance of 85 feet, from a 250 pound per delay shot, caused vibration in excess of the range of the instrument used to report this shot. (4) Due to this factor, the peak signal produced during this time may have actually been higher than 4.43 inches per second.

The U.S.B.N.'s Appalachian report reveals that 2.00 inches per second peak particle velocity, measured at the well's head, is a limit that will provide an adequate margin of safety from the standpoint of seismic effects. (4) Certainly the results of the Appalachian study serve to once again confirm that wells generally enjoy an extremely wide margin of safety from the shock and vibration effects produced from blasting. Anyone faced with devising a blasting program to protect well and water system from shock and vibration can do so by adhering to this generally recognized criteria for safety.

## SOURCE ROBBERY OR DIMINISHMENT

Diminishment of a water source, although extremely rare, can and does occur as a result of drilling and shooting operations. It does not occur as a result of blasting per se, but more because of a particular action taken. Most diminishment conditions occur because the drilling or excavation interrupts a condition of stability within the system.

Construction and geophysical companies probably have a greater risk of encountering conditions by which diminishment might be caused. For example, a road cut could intersect a perched water system allowing water to drain into the cut. If this perching provided a water source for individuals living at higher elevations than the cut, the water level in their wells could be reduced. Exploration drilling crews can also encounter similar situations. By action of their drilling, these crews might perforate an impervious layer supporting perched water and allow the perching to partially drain.

Figure #6 illustrates a case from the files and personal experience of this writer. In this particular instance, there was an artesian aquifer of local and areal extent. High on a hill a farmer had a flowing well. A seismic crew drilled a shot hole down the hill from his farmstead. It was known that most holes drilled in this area produced water, but up to this time, the holes responded to the sealing methods being used by the seismic crew. After the down hill shot was fired, the shothole began to flow profusely. By the following day, the farmer's well had almost ceased flowing. Attempts were made to plug the seismic shothole, but these only achieved partial success. However, it was expected that the farmer's well flow would return with the next recharge season.

In this case it was reasonably certain that the well and the shothole were interconnected in some way. The seismic shot developed the aquifer down dip from the well, lowering the piezometric level past the flow point of the well. Certainly it would be agreed that diminishment, whether permanent or not, did occur.

Robertson et al, in the recent report on blast effects on ground water supplies in Appalachia, found that test wells diminished when the mine cuts approached to within 300 feet of them. However, it was found that this was not a permanent diminishment. The next rainy cycle recharged the system in all but one of the test wells. These wells ended their testing period by producing as well as, or better than, they did before blasting occurred. (4)

The authors of the Appalachian ground water publication have theorized that this effect was due to stress relief. Stress relief supposedly increased both the porosity and permeability of the aquifers and accordingly increased the volume of storage. When the new storage capacity was recharged, the wells benefited from this increased storage capacity. (4)

It is this writer's contention that diminishment of a water supply is a very remote possibility, that is only probable under extremely ideal conditions. Significant distances, of 500 feet or more, between a shot and a well site, minimize or eliminate even this minor possibility.

### POLLUTION

The most significant part of all rock drilling is now accomplished with air drills. Consequently, the only possible contaminants that might be left in an aquifer as a result of drilling, would be a negligible quantity of oil and grease.

The detonation products of all commercial explosives are gases that vent to the atmosphere upon completion of the detonation reaction.

Seismic shotholes and other exploratory drill holes, if they are allowed to remain open, could channel pollutants into an aquifer. However, the majority of these holes are plugged and scaled after use and in most areas, the holes would quickly seal themselves even if they were left open.

Certainly the possibility for pollutants to leach from abandoned mines and spoil piles is valid, but any consideration for drilling and blasting to be a source of pollution for ground water or surface water would be beyond reason. The worst that could be expected from the act of drilling and shooting would be minor changes in suspended matter that would normally be found within a particular well system.

### INVALID CLAIMS

Up to this point, this paper has been illustrating the fact that it is extremely difficult to cause damage to an aquifer, or water well system, by the act of drilling and blasting. How then can so many claims for damages be filed by citizens at distances, and other conditions, that border on the unbelievable? The following two examples will illustrate such claims.

Figure #7 illustrates a geological situation in which a seismic party passed a property with a water well that lay at a distance of 6,100 feet, or more, from the shooting site. The party drilled

and shot three holes within this distance range. Each hole contained twenty pounds of explosives and was fired singly. Shortly after the holes were fired, a claim was filed by the owner of the water well for the following alleged damages:

- 1) The day of the shooting the property owner's well pump had broken.
- 2) The owner, after fixing the well pump, found that the water level in the well had fallen to the point that the pump could only work for a few minutes without allowing for recovery.
- 3) The owner's well water had been very good before the seismic party's shooting, but afterwards it was very bad and had both an odor and an oily taste.

It does not take most people long to see that the seismic party's shots were at such a distance from this well that only blasts of many times their magnitude could have produced a damaging vibration level. A simple study of the area's geology reveals that no connection exists by which shotholes could have caused diminishment. Similarly, there was no clear channel of migration for pollutants to reach the well. If there had been, normal transmission rates would have required weeks or even months for pollutants to reach the well over a distance of 6,100 feet. In this case the real problem was a poorly completed well, inadequate maintenance, an extra dry year and avarice.

Figure #8 illustrates another water well damage claim. In this situation some people had purchased a property which had a well system noted on Figure #8 as, "Well No. 1." Within a short time after their taking possession of the property, a seismic crew passed it and fired a ten pound charge in the shothole, as noted on the figure. The distance from the shot to the well was in excess of 600 feet.

The land owner claimed that the shot caused Well No. 1 to be contaminated with coal dust. He also claimed that the shot was responsible for causing Well No. 2 to go dry several months later. Well No. 2 had not been drilled when the shot in question took place. Due to its physical placement, Well No. 2 was a seasonal well and as such a normal rainfall year could allow it to produce for an entire year. This second part of the land owner's claim was dropped when winter and spring recharge allowed Well No. 2 to recover.

Investigation revealed that when the claimant had purchased this property, Well No. 1 had a 200 gallon sand filter located between the well and the house. There were two synchronized

pumps, one to charge the sand filter and one with a pressure tank to supply the house from the sand filter. The claimant stated that he had seen no reason to have two pumps working in line with each other and therefore had taken the sand filter out of line and pumped directly from the well to his house.

In this particular area the coal seams make the best aquifers. Other near surface rocks are made up of thin bedded sandstone and shale that have a very poor yield. The original owner of the property had gone to a great deal of expense to build a top quality sand filter in order to remove the coal dust from this water supply.

### CONCLUSIONS

This paper had attempted to show, in brief, that:

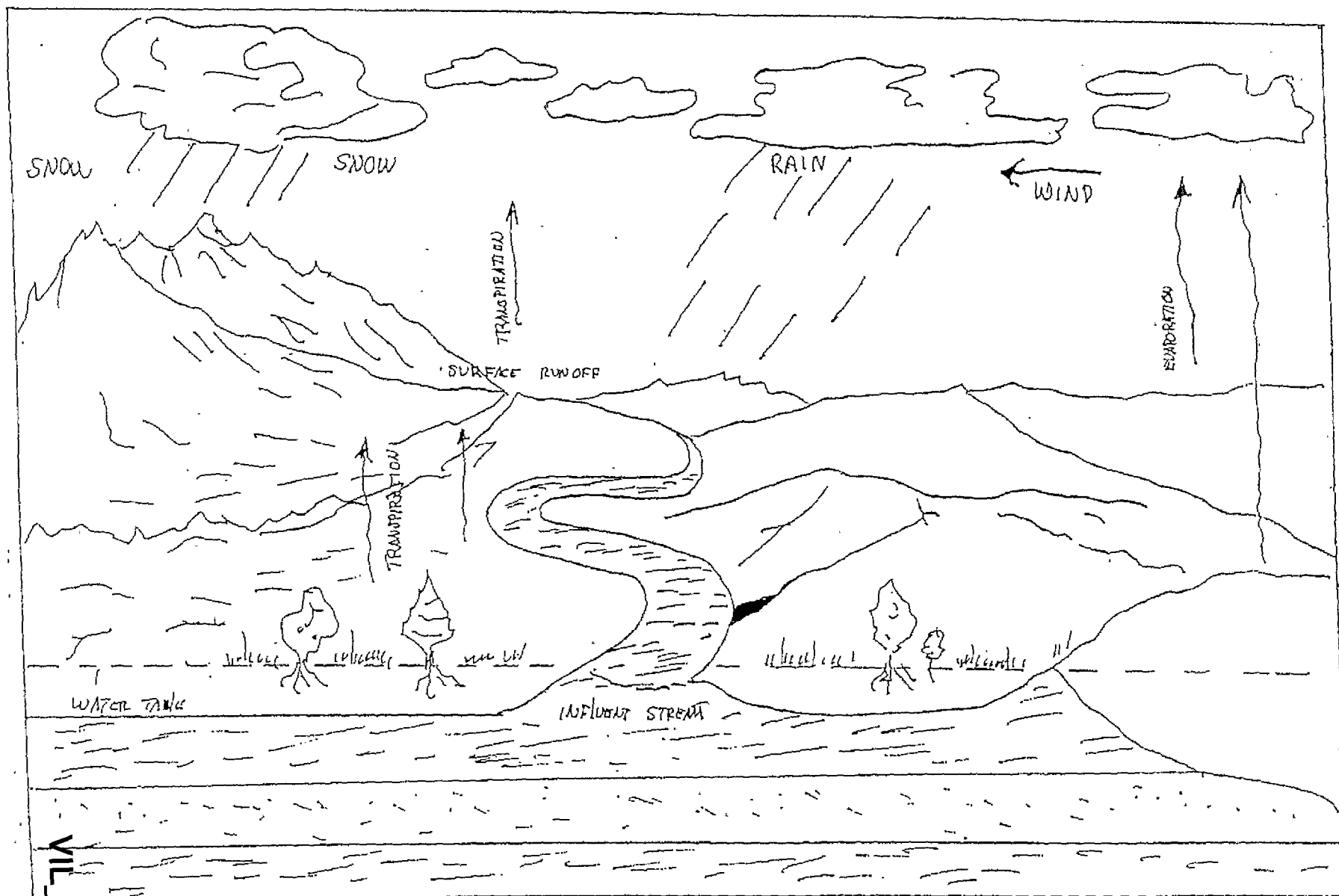
- 1) The ground water supply is controlled by the hydrologic cycle and the storage capacity of the geologic condition at a particular site,
- 2) In order for shock and vibration to be considered a cause of well damage, a very small charge weight to distance relationship must exist.
- 3) In order for drilling and blasting to be considered to be a cause for water source diminishment, a unique physical and geologic condition must exist between the position of the blast and the producing well in question.
- 4) Ground water pollution cannot be considered to result from drilling and blasting since there is nothing induced into the ground, by these acts, to cause pollution.

This paper has illustrated, both valid and invalid, claims for water well damages and its writer supports additional studies of the type recently released by the U.S.B.M.. (4) so that the actual condition of wells prior to, during and after blasting operations may be documented. Such studies are necessary in order to define, to the fullest extent, the condition under which water well damages may occur in all regions of the United States.

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7. White, Harold H. The Effect of Vibration from Commercial Blasting. Lusher and Lusher, Hazleton, PA, 1953.

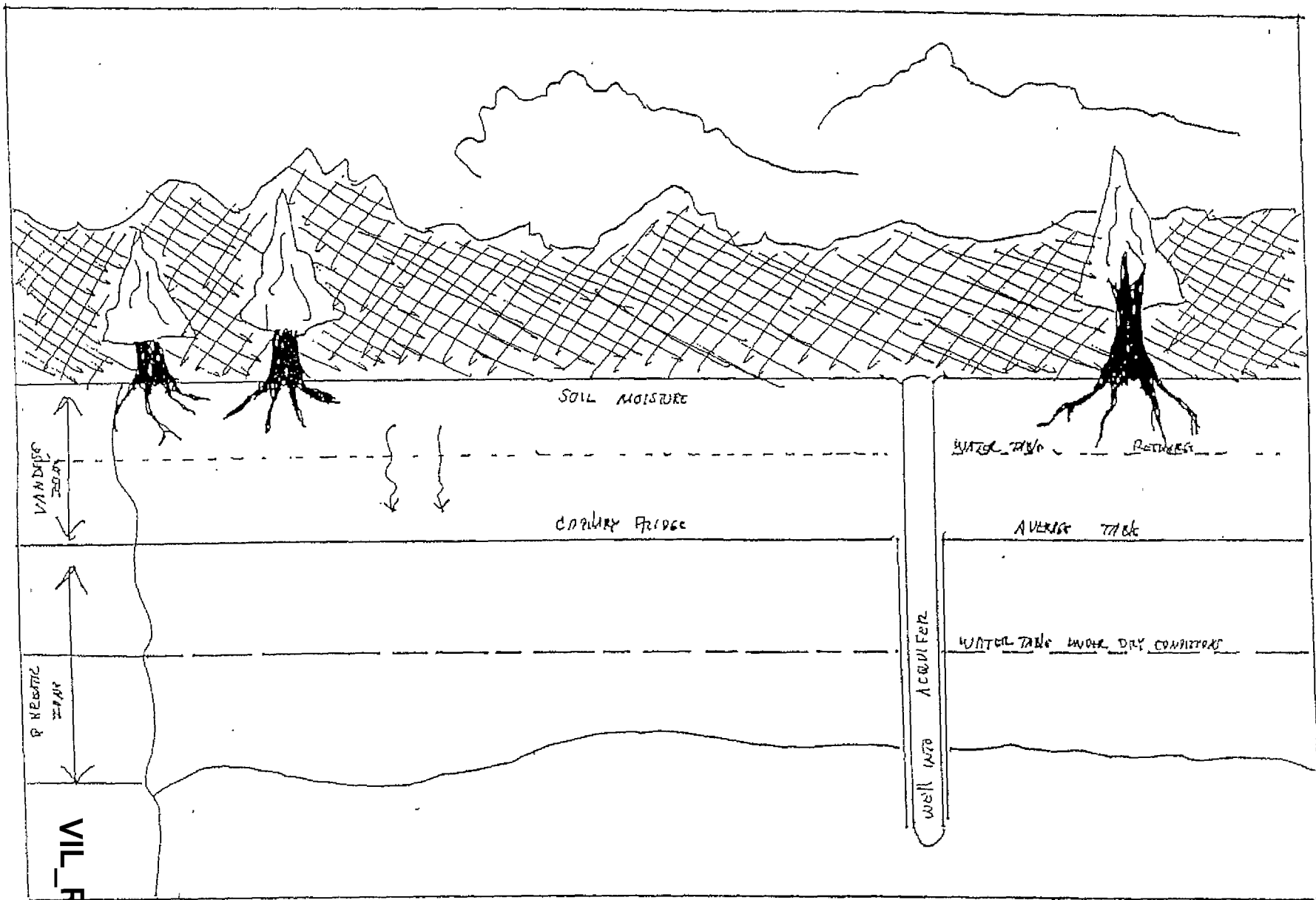
For those interested: Source #4 may be obtained from the U. S. Department of Commerce - National Technical Information Service, Springfield, VA 22161 (PBS2-152125)



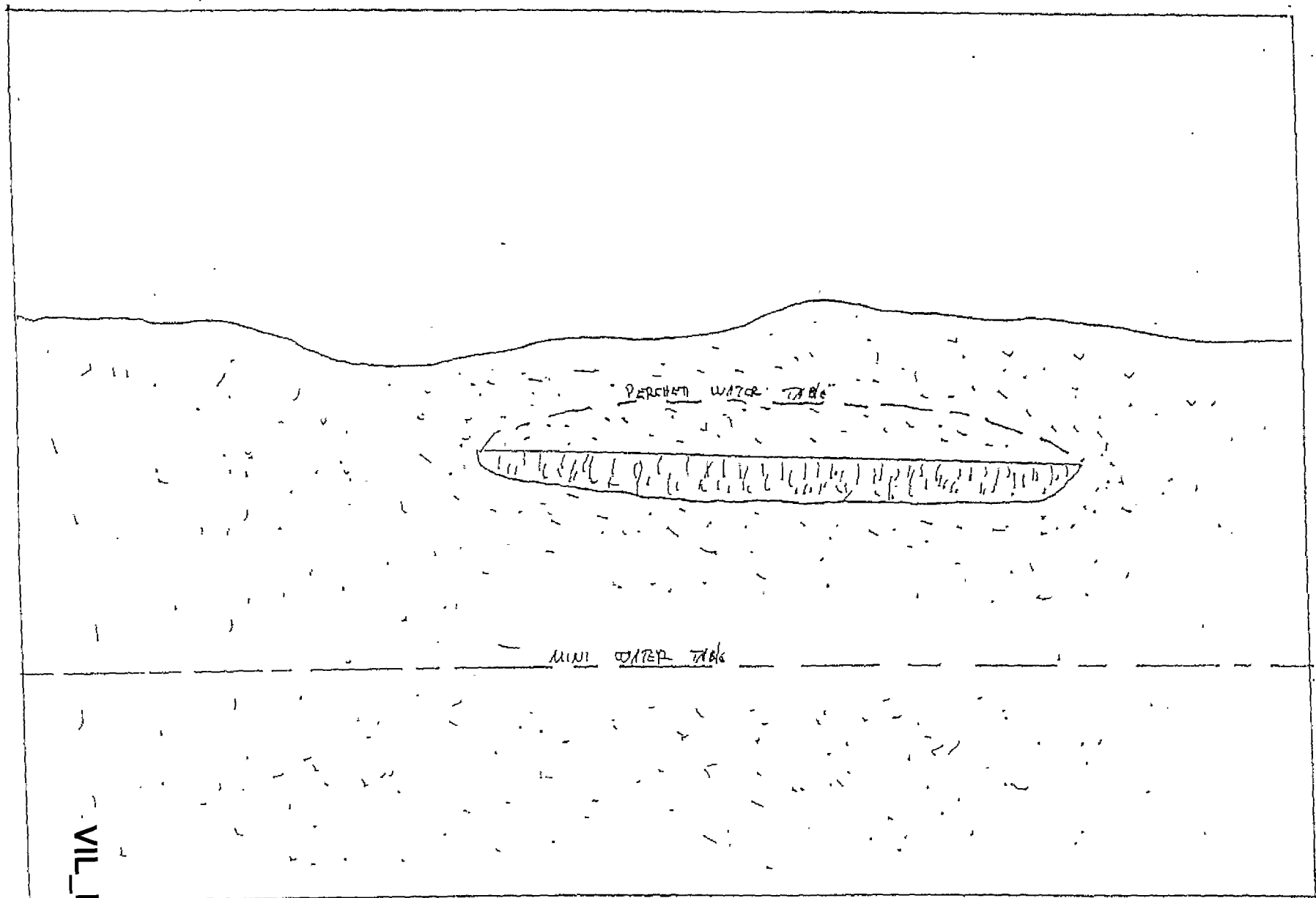
IDEALIZED Hydrologic Cycle  
FIGURE #1

VIL  
RESP03970





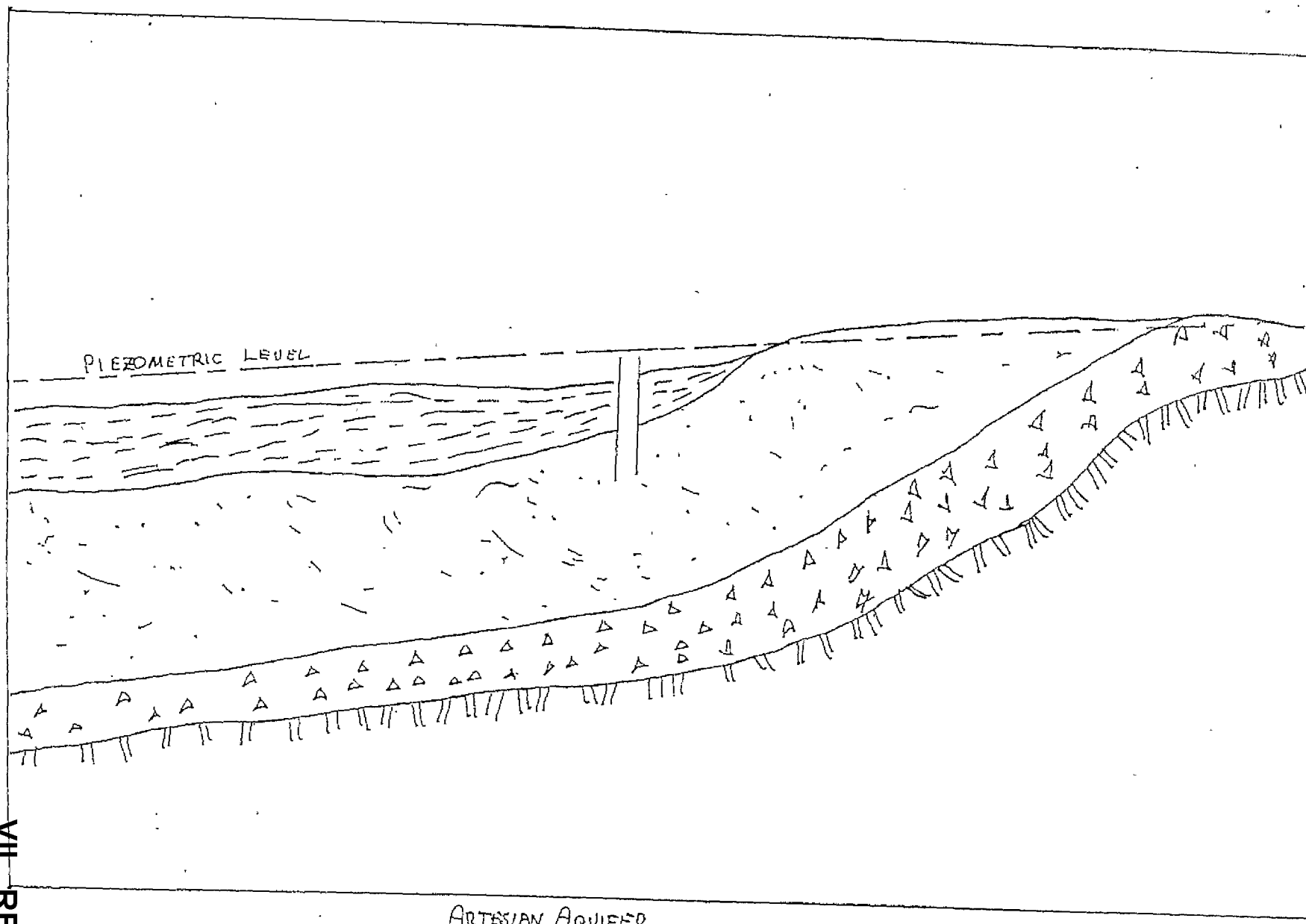
VIL\_RESP03971



PERCHMENT ABOVE MAIN WATER TABLE

FIGURE #13

VIL\_RESP03972



ARTESIAN AQUIFER  
FIGURE 4.

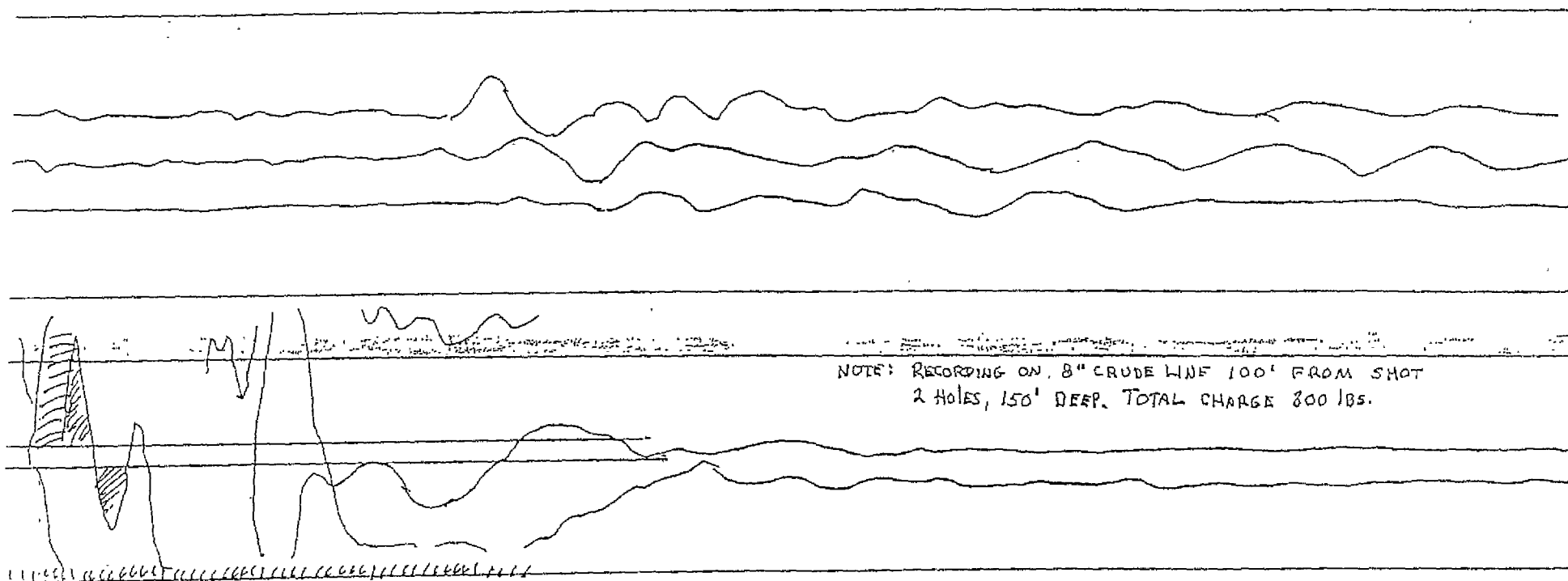
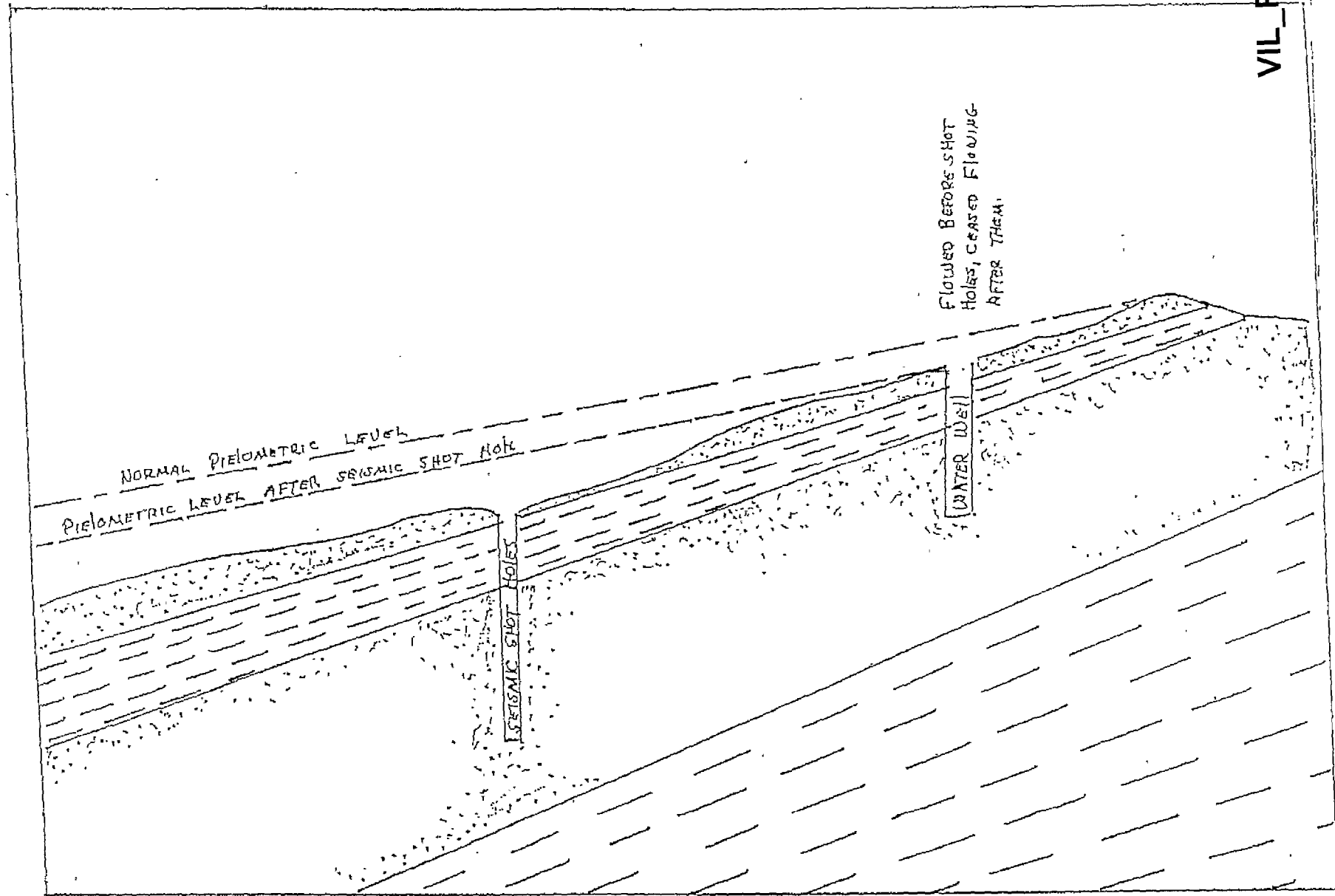
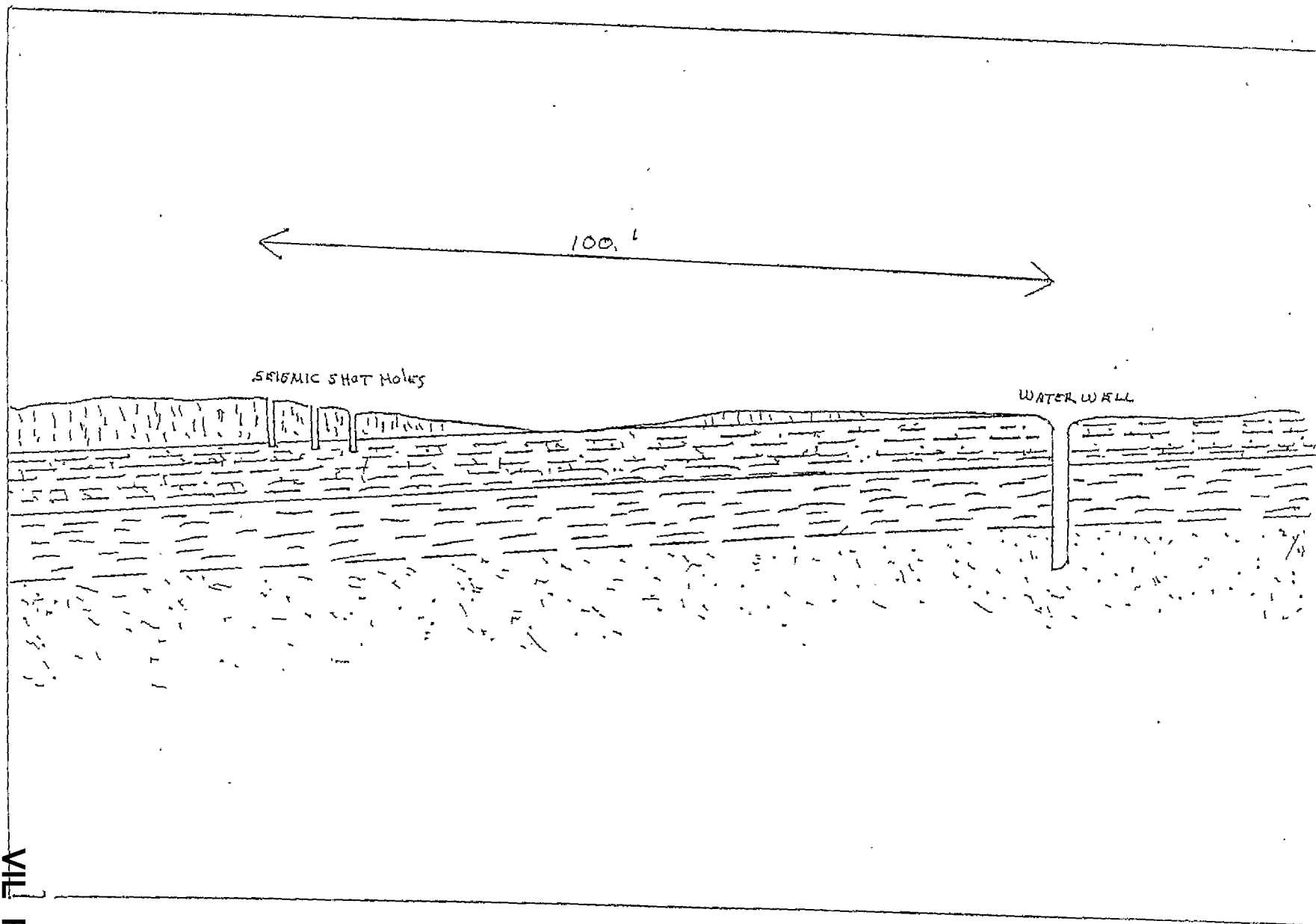


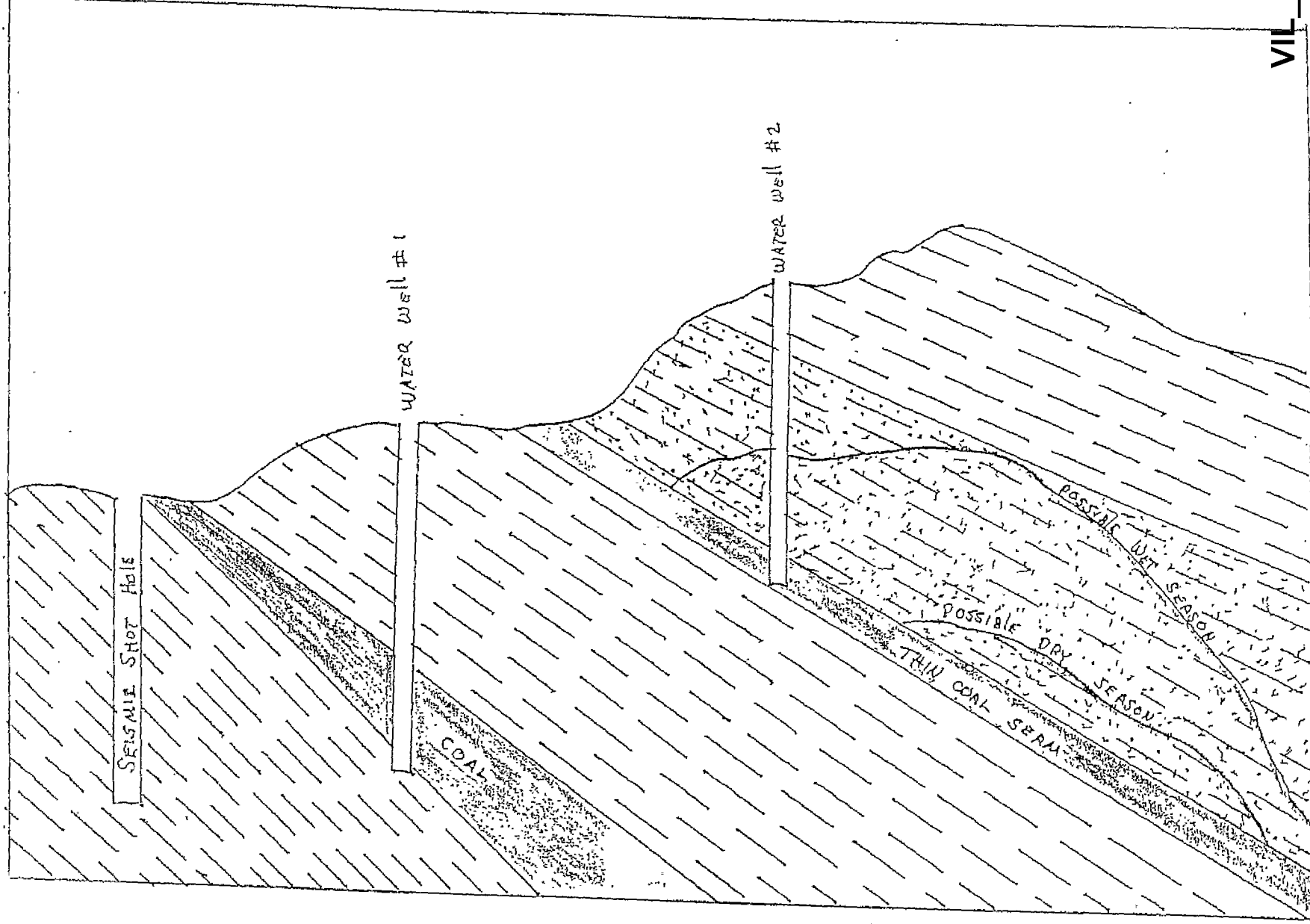
FIGURE 5

VIL\_RESP03974





VII RESP03976



**Equal Opportunity Employment**

The Company recognizes the dignity of the individual employee and the right of all employees to work in an environment where people are treated fairly, allowed to grow and achieve their potential. Federal and State law and Company policy require all employees or potential employees be hired and/or promoted without regard to race, color, religion, handicap or disability, Vietnam Era veteran status, sex, age or national origin. It is the intent of the Company through this policy to provide a working environment that provides for equal employment opportunities to all.

The company has an action plan to ensure that minority group individuals, women, handicapped persons and disabled and Vietnam Era veterans are given opportunities to know of openings and are encouraged to seek promotions. Equal opportunity and equal consideration will be given to all applicants and employees in personnel actions which include recruiting and hiring, selection for training, promotion, demotion, discipline, rates of pay or other compensation, transfer, termination, recalls and social and recreational programs.

Every manager, supervisor and human resource personnel are required to follow equal opportunity employment practices at all times.

Any violations of these equal opportunity policies by any manager, supervisor or other employee must be reported immediately to:

Don Embrey  
Human Resources Manager  
Maine Drilling & Blasting, Inc.  
PO Box 1140 - Brunswick Road  
Gardiner, Maine 04345  
207-582-2338



**Affirmative Action Program**

It is the continuing policy of Maine Drilling & Blasting, Inc. to hire and employ qualified, reliable and productive employees without regard to race, creed, religion, color, sex, national origin, age, veteran's status and mental or physical handicap unless a lawful and stated bona fide occupational disqualification exists. In order to implement this policy, the company has adopted an affirmative action program.

Maine Drilling & Blasting, Inc. will:

Advertise for employment opportunities as an EEO employer. All employment advertisement will encourage women and minority applicants to apply.

Maintain contact with community resources for applicant referral purposes.

Provide OJT training and allow for in-house advancement for employees without regard to race, creed, religion, color, sex, age, national origin, disabled or Vietnam Era veteran status, or physical or mental handicap.

Cooperate with federal, state or local government agencies who have the responsibility to observe our actual compliance with various laws relating to employment.

Furnish such reports, records, etc. as required to document and promote a program of equal opportunity for all persons regardless of race, creed, religion, color, sex, age, national origin, disabled or Vietnam Era veteran status, or physical or mental handicap.

Appoint a Corporate EEO officer who will be charged with the responsibility of compliance issues of this plan.

Post the identity of the Corporate EEO officer on company bulletin boards.

Provide EEO training of Officers, Managers and Supervisors who have the overall responsibility of carrying out company Equal Employment Opportunity policies in their respective work areas.

Provide training on an annual basis for employees with regard to EEO and Sexual Harassment Policies.

**EEO Complaint Procedure**

**How To Report An EEO Complaint:**

1. Report the complaint to the Human Resources Manager or President.
2. If the individual who is the subject of the complaint is the Human Resources Manager, report the complaint directly to the **President**.

**EEO Complaint Report Required Action**

An investigation of all EEO complaints will be conducted by the **Human Resources Manager** to determine if particular action or incident is either prohibited behavior or is discriminatory under EEO guidelines.

When a complaint is filed, the corporate EEO Officer will:

- Immediately notify the President and any personnel directly involved or named in the complaint. Such notice will provide information on the nature and type of complaint.
- Conduct an investigation of the complaint.
- Determine all available facts and information regarding the matter.
- Provide a written report outlining the results of the investigation including any recommendations for corrective actions or complaint resolution.
- In cases of gross misconduct and/or clear violation of the law, immediate and direct corrective action will be taken.

**Corrective Action – Complaint Resolution**

The Company will:

- Inform the complainant of the results of the investigation.
- Conduct an arbitration hearing to resolve the complaint through mutual conciliation.
- The complainant shall agree to all actions taken on his/her behalf including the specific actions to be taken by the employer.

Employees are protected at all times from retaliation or punishment when making an EEO complaint.

### Disciplinary Action

Violation of the EEO Policy is unacceptable conduct and will not be condoned or tolerated by the Company. It undermines the integrity of the employment relationship, destroys morale and interferes with performance. Violation of the EEO policy is considered grounds for disciplinary action which may include suspension or termination of employment.

#### Responsibility

Managers, Supervisors and employees at all levels are responsible for:

- Implementing and enforcing this policy.
- Assisting in investigating and processing complaints quickly, professionally and with respect for all parties.
- Assuring the prevention of any discriminatory practices within their areas of responsibility.

Every employee is responsible for reporting any incident of discrimination that he/she learns of or witnesses. Management will maintain the highest degree of confidentiality possible with respect to such complaints and is obligated to investigate all complaints.

#### Legal Rights

This policy governs only the internal enforcement of the principles of Equal Employment Opportunity and is not intended to alter whatever rights an employee has to pursue a complaint under applicable State or Federal regulations.



### Notice of Discrimination Complaint

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone #: \_\_\_\_\_  
Date of Hire: \_\_\_\_\_  
Division: \_\_\_\_\_  
Supervisor: \_\_\_\_\_

#### Facts of Alleged Incident

Name(s) of Person(s) Involved: \_\_\_\_\_

Date of Incident: \_\_\_\_\_

Location of Incident: \_\_\_\_\_

Name(s) of Witness(es) \_\_\_\_\_

Describe What Happened: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Employee Signature \_\_\_\_\_ Date \_\_\_\_\_

Company Representative \_\_\_\_\_ Date \_\_\_\_\_

PO Box 1140  
423 Brunswick Ave  
Gardiner, Maine 04345

Tel. 207-582-2338

*An Equal Opportunity Employer*

88 Gold Ledge Ave  
Auburn, NH 03032

Tel. 603-647-0299

*An Equal Opportunity Employer*

**VIL\_RESP03982**



## **SECTION 21**

### **AIR EMISSIONS**

This project will not generate any point sources of air emissions other than house chimneys serving individual heating units. Non-point sources will be restricted to vehicular traffic using this subdivision. This project will not generate significant air emissions requiring an emissions license.



## SECTION 22

### ODORS

This development consists solely of residential condominiums and will not create any significant odors.





## SECTION 23

### WATER VAPOR

This residential development will not generate water vapor emissions impacting surrounding neighborhood or abutting properties.



## SECTION 24

### SUNLIGHT

The development will have no effect on the existing abutters access to sunlight.



## **SECTION 25**

### **NOTICES**

**A. Evidence that notice has been sent**

Attached as Exhibit 1, please find the Notice of Intent to File (Form B) and Public Notice Certification (Form C).

**B. List of abutters for purposes of notice**

Attached as Exhibit 2, please find a list of abutters.

**Section 25: Exhibit 1**  
**Notice of Intent to File and Notice Certification**

**PUBLIC NOTICE:  
NOTICE OF INTENT TO FILE AND NOTICE OF PUBLIC INFORMATIONAL MEETING**

Please take notice that

HRC – Village at Little Falls, LLC of 2 Market Street in Portland, Maine 04101 (Ph207-772-7219)

is intending to file a Site Location of Development Act permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S.A. §§ 481 thru 490 on or about March 16, 2007

The proposed development consists of the removal of an old mill and the construction of 85 new residential condominium units. The project is located on an 8.03 acre parcel near the corner of Route 202 and Depot Street in Windham Maine.

A public informational meeting is scheduled for Thursday, March 15, 2007 at 10:00. The meeting will be held at the development site. Meeting participants will gather at the corner of the property nearest Depot Street and the Little Falls Landing apartment building.

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

For Federally licensed, permitted, or funded activities in the Coastal Zone, review of this application shall also constitute the State's consistency review in accordance with the Maine Coastal Program pursuant to Section 307 of the federal Coastal Zone Management Act, 16 U.S.C. § 1456. (Delete if not applicable.)

The application will be filed for public inspection at the Department of Environmental Protection's office in *Portland* during normal working hours. A copy of the application may also be seen at the municipal offices in Windham, Maine.

Written public comments may be sent to the regional office in Portland where the application is filed for public inspection:

MDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04103

**VIL\_RESP03994**



**PUBLIC NOTICE FILING AND CERTIFICATION**

The DEP Rules, Chapter 2, require an applicant to provide public notice for all Site Location projects with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. "Abutter" for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.
2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.
3. **Municipal Office:** You must send a copy of the Notice of Intent to File and a **duplicate of the entire application** to the Municipal Office.

**ATTACH a list of the names and addresses of the owners of abutting property.**


**CERTIFICATION**

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 14, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

The Public Informational Meeting was held on MARCH 15, 2007.  
Date

Approximately 8 members of the public attended the Public Informational Meeting.

  
\_\_\_\_\_  
Signature of Applicant or authorized agent

3.19.07  
\_\_\_\_\_  
Date

**Section 25: Exhibit 2**  
**List of Abutters**

38/3& 37/21

Merrill T. & Carmela Laskey  
68 High Street  
Windham, ME 04062

38/10

S.D. Warren Co.  
P.O. Box 5000  
Westbrook, ME 04094

38/49/D1

Marie Farrington  
22 Brookside Drive  
Falmouth, ME 04105

38/50

JFG Enterprises  
P.O. Box 39  
Lebanon, ME 04027-0039

37/13

Walter W. & Sandra Thorpe  
11 Androscoggin Street  
Windham, ME 04062

38/5

Marjorie Drost  
P.O. Box 105  
Windham, ME 04062

38/39

VA Regional Office-Sec of Vet Affairs  
P.O. Box 345  
Portland, ME 04104-0345

38/49/D2 & D4

Gerard P. Giguere Jr.  
Patricia M. Giguere  
P.O. Box 1272  
Windham, ME 04062

37/4B

Christopher V. Caputo  
7 Van Tassel Drive  
Windham, ME 04062

37/20

Janet G. Foster  
18 Ash Street  
Windham, ME 04062

38/7-1

South Windham Housing Corp  
307 Cumberland Avenue  
Portland, ME 04101

38/68 High Street  
49B

MCL Realty LLC  
33 Main Street  
Windham, ME 04062

38/49/D3

John W. Gore  
257 Varney Mill Road  
Windham, ME 04062

37/12

Lester A. & Mary Coulombe  
12 Androscoggin Street  
Windham, ME 04062

VIL\_RESP03997

**INDIVIDUAL NRPA PERMIT APPLICATION**

**VILLAGE AT LITTLE FALLS**

March 2007



*Prepared by: Northeast Civil Solutions, Inc.  
153 US Route 1  
Scarborough, ME 04074*

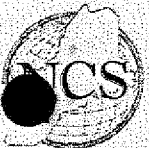
# INDIVIDUAL NRPA PERMIT APPLICATION

## VILLAGE AT LITTLE FALLS

Route 202  
Tax Map 38, Parcels 6&7  
Windham, Maine

Prepared For:  
HRC – Village at Little Falls, LLC  
2 Market Street  
Portland, Maine 04101

**March 2007**



Prepared by:  
Northeast Civil Solutions, Inc.  
153 U.S. Route 1  
Scarborough, ME 04074

29522

**VIL\_RESP03999**



# INDIVIDUAL NRPA PERMIT APPLICATION

## VILLAGE AT LITTLE FALLS

Route 202  
Tax Map 38, Parcels 6&7  
Windham, Maine

Prepared For:  
HRC – Village at Little Falls, LLC  
2 Market Street  
Portland, Maine 04101

**March 2007**



Prepared by:  
Northeast Civil Solutions, Inc.  
153 U.S. Route 1  
Scarborough, ME 04074

29522

**VIL\_RESP04000**

Department of Environmental Protection  
Bureau of Land & Water Quality  
17 State House Station  
Augusta, Maine 04333  
Telephone: 207-287-3901

FOR DEP USE \_\_\_\_\_  
ATS # \_\_\_\_\_  
L- \_\_\_\_\_  
Total Fees: \_\_\_\_\_  
Date: Received \_\_\_\_\_

## APPLICATION FOR A NATURAL RESOURCES PROTECTION ACT PERMIT

→ PLEASE TYPE OR PRINT IN BLACK INK ONLY

<b>1. Name of Applicant:</b>		HRC – Village at Little Falls, LLC c/o Steve Etzel		<b>4. Name of Agent:</b> (if applicable)		Northeast Civil Solutions, Inc. c/o Lee Allen	
<b>2. Applicant's Mailing Address:</b>		2 Market Street Portland, Maine 04101		<b>5. Agent's Mailing Address:</b>		153 US Route One Scarborough, Maine 04074	
<b>3. Applicant's Daytime Phone #:</b>		207-772-7219		<b>6. Agent's Daytime Phone #:</b>		207-883-1000	
<b>7. Location of Activity:</b> (Nearest Road, Street, Rt.#)		Corner of Route 202 and Depot St		<b>8. Town:</b>		Windham	
				<b>9. County:</b>		Cumberland	
<b>10. Type of Resource:</b> (Check all that apply)		<input checked="" type="checkbox"/> River, stream or brook <input type="checkbox"/> Great Pond <input type="checkbox"/> Coastal Wetland <input checked="" type="checkbox"/> Freshwater Wetland <input type="checkbox"/> Wetland Special Significance <input type="checkbox"/> Significant Wildlife Habitat <input type="checkbox"/> Fragile Mountain		<b>11. Name of Resource:</b>		Presumpscot River	
				<b>12. Amount of Impact:</b> (Sq.Ft.)		Fill: 740 SF of Freshwater Wetland 4,800 SF of Presumpscot River Dredging/Veg Removal/Other: NA	
<b>13. Type of Wetland:</b> (Check all that apply)		<input type="checkbox"/> Forested <input type="checkbox"/> Scrub Shrub <input type="checkbox"/> Emergent <input type="checkbox"/> Wet Meadow <input type="checkbox"/> Peatland <input type="checkbox"/> Open Water <input type="checkbox"/> Other <u>Man-made Drainage Channel</u>		<b>FOR FRESHWATER WETLANDS/NOT OF SPECIAL SIGNIFICANCE ONLY</b> <b>Tier 1</b> <input type="checkbox"/> 0 - 4,999 sq. ft. <input checked="" type="checkbox"/> 5,000 - 9,999 sq. ft. <input type="checkbox"/> 10,000 - 14,999 sq. ft.			
				<b>Tier 2/3</b> <input type="checkbox"/> 15,000 - 19,999 sq. ft. <input type="checkbox"/> 20,000 - 43,560 sq. ft. <input type="checkbox"/> > 43,560 sq. ft.			
<b>14. Brief Activity Description:</b>		1. A small man made drainage channel will be filled resulting in a wetland impact of 740 sf. 2. The abandoned mill building bordering the river will be removed and the shore will be restored to a natural state. The shore restoration will result in the fill of approximately 4,800 sf of the Presumpscot River. 3. Stormwater discharge from the treatment system is located within 75' of the river.					
<b>15. Size of Lot or Parcel:</b>		<input type="checkbox"/> square feet, or <input checked="" type="checkbox"/> 8.03 acres					
<b>16. Title, Right or Interest:</b>		<input checked="" type="checkbox"/> own <input type="checkbox"/> lease <input type="checkbox"/> purchase option <input type="checkbox"/> written agreement					
<b>17. Deed Reference Numbers:</b>		Book#: 20753    Page: 21 and 78353    and pg 165		<b>18. Map and Lot #'s:</b>		Map #: 38    Lot #: 6&7	
<b>19. DEP Staff Previously Contacted:</b>		Mary Beth Richardson & Ben Viola		<b>20. Part of a larger project:</b>		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>After-the-Fact:</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>21. Resubmission of Application?</b>		<input type="checkbox"/> Yes → <input checked="" type="checkbox"/> No If yes, previous application # _____		<b>Previous project manager:</b>			
<b>22. Written Notice of Violation?</b>		<input type="checkbox"/> Yes → <input checked="" type="checkbox"/> No If yes, name of DEP enforcement staff involved: _____		<b>23. Previous Wetland Alteration:</b>		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>24. Detailed Directions to the Project Site:</b>		Head West on Warren Avenue. In Westbrook, Turn Right onto Cumberland Road. Cumberland Road will become River Road. Turn left onto Depot Street. The project is located near the corner of Depot Street and Route 202.					
<b>25. TIER 1</b>				<b>TIER 2/3 AND INDIVIDUAL PERMITS</b>			
<input type="checkbox"/> Fee <input type="checkbox"/> Topographic Map <input type="checkbox"/> Plan or Drawing (8 1/2" x 11") <input type="checkbox"/> Photos of Area <input type="checkbox"/> Statement of Avoidance & Minimization <input type="checkbox"/> Statement/Copy of cover letter to Maine Historic Preservation Commission				<input checked="" type="checkbox"/> Fee <input checked="" type="checkbox"/> Topographic Map <input checked="" type="checkbox"/> Photos of Area <input checked="" type="checkbox"/> Plan or Drawing (8 1/2" x 11") <input checked="" type="checkbox"/> Copy of Public Notice <input checked="" type="checkbox"/> Professional Certification/Delineation <input checked="" type="checkbox"/> Erosion Control Plan			
				<input checked="" type="checkbox"/> Alternatives Analysis, if required <input checked="" type="checkbox"/> Description of Avoidance/Minimization <input checked="" type="checkbox"/> NA Compensation Plan (if required) <input checked="" type="checkbox"/> NA Description of Previously Mined Peatland (if required) <input checked="" type="checkbox"/> Statement/Copy of cover letter to Maine Historic Preservation Commission <input checked="" type="checkbox"/> Construction Plan, if required			
<b>26. FEES, Amount Enclosed:</b>		\$183 Processing Fee plus \$64 Licensing Fee					

VIL\_RESP04001

**IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.**

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

**DEP SIGNATORY REQUIREMENT**

**PRIVACY ACT STATEMENT**

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor a permit be issued.

**CORPS SIGNATORY REQUIREMENT**

USC Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry shall be fined not more than \$10,000 or imprisoned not more than five years or both. I authorize the Corps to enter the property that is subject to this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

**DEP SIGNATORY REQUIREMENT**

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



SIGNATURE OF AGENT/APPLICANT

Date: 3.19.07

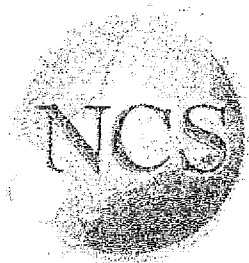
Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in the application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

*NOTE: Any changes in activity plans must be submitted to the DEP and the Corps in writing and must be approved by both agencies prior to implementation. Failure to do so may result in enforcement action and/or the removal of the unapproved changes to the activity.*

(pink)

**VIL\_RESP04002**





INCORPORATED IN THE STATE OF MAINE  
*Northeast Civil Solutions*  
INCORPORATED  
100 WINDHAM ROAD, SUITE 200, WINDHAM, MAINE 04092

153 E.S. Road  
Searborough  
Maine 04074

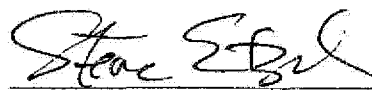
February 12, 2007

To Whom It May Concern:

RE: Village at Little Falls, LLC

tel  
207.883.1000  
800.882.2237  
fax  
207.883.1001

I, Steve Etzel, on behalf of HRC-Village at Little Falls, LLC, authorize Northeast Civil Solutions, Inc. to sign any and all applications, plans, permit requests, and other paperwork in conjunction with obtaining final municipal and state approval for the Village at Little Falls residential development on Route 202 in Windham, Maine.

 2/13/07  
Steve Etzel, Vice Pres. Date

FEB 14 2007

VIL\_RESP04003

1

*Activity Description*

2

*Alternative Analysis Report*

3

*Map*

4

*Photographs*

5

*Plans*

6

*Additional Plans*

7

*Construction Plan*

8

*Erosion Control Plan*

9

*Site Condition Report*

10

*Public Notice of Intent to File*

11

*Maine Historic Preservation  
Commission Correspondence*

12

**VIL\_RESP04004**

C

VIL\_RESP0005

## SUBMISSIONS CHECKLIST

If a provision is not applicable, put "NA"

**Section 1. Development description****A. Narrative**

1. Objectives and details
2. Existing facilities (with dates of construction)

**B. Topographic map**

1. Location of development boundaries
2. Quadrangle name

**C. Construction plan**

1. Outline of construction sequence (major aspects)
2. Dates

**D. Drawings**

1. Development facilities
  - a. Location, function and ground area
  - b. Length/cross-sections for roads
2. Site work (nature and extent)
3. Existing facilities (location, function ground area and floor area)
4. Topography
  - a. Pre- and post-development (contours 2 ft or less)
  - b. Previous construction, facilities and lot lines

**Section 2. Title, right or interest (copy of document)****Section 3. Financial capacity****A. Estimated costs****B. Financing**

1. Letter of commitment to fund
2. Self-financing
  - a. Annual report
  - b. Bank statement
3. Other
  - a. Cash equity commitment
  - b. Financial plan
  - c. Letter
4. Affordable housing information

**Section 4. Technical ability (description)**

- A. Prior experience (statement)
- B. Personnel (documents)

**Section 5. Noise****A. Developments producing a minor noise impact (statement)**

1. Residential developments
2. Certain non-residential subdivisions
3. Schools and hospitals
4. Other developments
  - a. Type, source and location of noise
  - b. Uses, zoning and plans
  - c. Protected locations
  - d. Minor nature of impact

- X Section 6. Visual quality and scenic character**(narrative, description, visual impact analysis)

X **Section 7. Wildlife and fisheries** (narrative)

**X Section 8. Historic sites (narrative)**

**X Section 9. Unusual natural areas (narrative)**

**Section 10. Buffers**  
A. Site plan and narrative

$$\begin{array}{r} NA \\ NA \\ NA \\ \hline A \end{array}$$

- 支

X  
X  
X  
X  
X  
X  
X  
X  
X  
X  
X  
X  
X  
X  
X

- VIL RESP04007**



- c. Subsurface investigation report with test pit or boring logs
- d. Permeability analysis
- e. Infiltration structure design
- f. Pollutant generation and transport analysis
- g. Monitoring and operations plan
  - i. Locations of storage points of potential contaminants
  - ii. Locations of observation wells and infiltration monitoring plan
  - iii. Groundwater quality monitoring plan
- 5. Drainage easement declarations.
- F. Stormwater quality treatment plan peak discharge calculations
  - 1. Basic stabilization plan
    - a. Ditches, swales, and other open channel stabilization
    - b. Culvert and storm-drain outfall stabilization
    - c. Earthen slope and embankment stabilization
    - d. Disturbed area stabilization
    - e. Gravel roads and drives stabilization
  - 2. General Standard
    - a. Calculations for sizing BMP
    - b. Impervious area calculation
    - c. Developed area calculation
    - d. Summary spreadsheet of calculations
  - 3. Phosphorus control plan
    - a. Calculations for the site's allowable phosphorus export
    - b. Calculations for determining the developed site's phosphorus export
    - c. Calculations for determining any phosphorus compensation fees
  - 4. Offset Credits
    - a. Urban impaired stream
      - Offset credit calculation
    - b. Phosphorus credit determination
      - i. Location map
      - ii. Scaled plan
      - iii. Title and right
      - iv. Demolition plan
      - v. Vegetation plan
      - vi. Offset credit calculation
      - vii. Calculation for the new allowable export
  - 5. Runoff treatment measures
    - a. structural measures
      - i. Design drawings and specifications
      - ii. Design calculations
      - iii. Maintenance plan
      - iv. TSS removal or phosphorus treatment factor determinations
      - v. Stabilization plan
    - b. Vegetated buffers
      - i. Soil survey
      - ii. Buffer plan
      - iii. Turnout and level spreader designs
      - iv. Deed restrictions
  - 6. Control plan for thermal impacts to coldwater fisheries
  - 7. Control plan for other pollutants
  - 8. Engineering inspection of stormwater management facilities

G. Maintenance of common facilities or property

- 1. Components of the maintenance plan
  - A. Maintenance of facilities by owner or operator
    - 1. Site owner or operator (name legally responsible party)

- 2. General inspection and maintenance requirements
  - a. Drainage easements
  - b. Ditches, culverts, and catch-basin systems
  - c. Roadways and parking surfaces
  - d. Stormwater detention and retention facilities
    - 1. Embankment inspection and maintenance
    - 2. Outlet inspection and clean-out
    - 3. Spillway maintenance
    - 4. Sediment removal and disposal
  - e. Stormwater infiltration facilities
    - 1. Sediment protection plan
    - 2. Infiltration rehabilitation plan
    - 3. Sediment removal and disposal
    - 4. Groundwater monitoring plan
  - f. Proprietary treatment devices
  - g. Buffers
  - h. Other practices and measures

1. Off-site credits
2. Compensation fees (Urban Impaired Stream/Phosphorus)
3. Development impacts

- A. Narrative
  1. Soil types
  2. Existing erosion problems
  3. Critical areas





6. Summary of depth measurements
7. Characteristics of subsurface strata
8. Well installation contract
9. Schematic cross-sections
10. Monitoring point summary table
11. Protective casing
12. On-site well identification

X  
NA

↓  
NA  
X  
NA  
NA  
X

- A. Water supply method
  - 1. Individual wells (evidence of sufficient/healthful supply)
    - a. Support of findings by well drillers
    - b. Support of findings by geologist
  - 2. Common well(s) (reports)
    - a. Hydrogeology report
    - b. Engineering report
    - c. Well installation report
    - d. Long-term safe yield and zone of influence determination
    - e. Public water supply
      - i. Proposed well or wells
      - ii. Existing well or wells
      - iii. Water quality analysis
  - 3. Well construction in shallow-to-bedrock areas
  - 4. Additional information
  - 5. Off-site utility company or public agency
  - 6. Other sources
- B. Subsurface wastewater disposal systems (locations of systems and wells)
- C. Total usage (statement re: total anticipated water usage)

NA

- A. On-site subsurface wastewater disposal systems (investigation results)
  - 1. Site plan
  - 2. Soil conditions summary table
  - 3. Logs of subsurface explorations
  - 4. Additional test pits, borings or probes
    - a. Soil conditions A
    - b. Soils with Profiles 8 and 9 parent material
    - c. Soil conditions D
    - d. Disposal field length 60 feet or greater
  - 5. 3-bedroom design
  - 6. Larger disposal systems
    - a. System design details
    - b. Plan view
    - c. Cross sections
    - d. Test pit data
    - e. Mounding analysis
- B. Nitrate-nitrogen impact assessment
  - 1. When required
    - a. Exempted\_\_\_\_\_
      - i. Conventional systems meeting certain setbacks
      - ii. Denitrification systems
    - b. Special conditions and other exemptions
  - 2. Assumptions
    - a. Initial concentration
    - b. Background concentration
    - c. Contribution from development

- NA
- d. Mixing and dilution
  - e. Severe-drought scenario
  - f. Wastewater flow to subsurface wastewater disposal fields
3. Assessment report minimum requirements
- a. Narrative and calculations
  - b. Site plan
    - i. Well locations
    - ii. 10 mg/l and 8 mg/l isocons
    - iii. Groundwater contours and groundwater flow divides
  - c. References
4. Denitrification systems
- a. Design plans and specifications
  - b. Installation information
  - c. Monitoring plan
  - d. Maintenance
  - e. Backup system
- X
- D. Municipal facility or utility company letter
- NA
- E. Storage or treatment lagoons

X

X

X

X

NA

X

**Section 18. Solid waste** (list: type, quantity, method of collection and location)

- A. Commercial solid waste facility (final disposal location)
- B. Off-site disposal of construction/demolition debris (final disposal location)
- C. On-site disposal of woodwaste/land clearing debris
  - 1. Applicability of rules (evidence re: applicability of rules)
  - 2. Burning of wood wastes
    - a. Delineation on site plan
    - b. Plans for handling unburned woodwaste and woodash
    - c. Evidence of capacity to accept waste (approved facility)
    - d. Usage of materials
    - e. Data on mixing ratios and application rates
- D. Special or Hazardous Waste

X

X

NA

X

**Section 19. Flooding**

- A. Explanation of flooding impact
- B. Site plan showing 100-year flood elevation
- C. Hydrology analysis
- D. FEMA flood zone map with site boundaries

X

X

**Section 20. Blasting**

- A. Site Plan or map
- B. Report
  - 1. Assessment
  - 2. Blasting plan

X

X

**Section 21. Air emissions** (narrative and summary)

- A. Point and non-point sources identified
- B. Emission components (point sources)

X

X

X

**Section 22. Odors**

- A. Identification of nature/source
- B. Estimate of areas affected
- C. Methods of control)

X

**Section 23. Water vapor** (narrative)

X

**Section 24. Sunlight** (statement and drawing, if required)

**Section 25. Notices**

- A. Evidence that notice sent
- B. List of abutters for purposes of notice



## ATTACHMENT 1

### ACTIVITY DESCRIPTION

The proposed Village at Little Falls development consists of 85 new residential condominium units with associated paved streets, landscaping, driveways, utilities, and stormwater management infrastructure. The project will include two 12-unit apartment buildings, nine duplexes, nine porch style units, 33 townhouse units, and a single-family residence. The 8.03-acre property is located in Windham, Maine at the corner of Route 202 and Depot Street. The property has approximately 370 feet of frontage on the Presumpscot River.

Currently, an old mill building (in disrepair) occupies the site. The abandoned mill has a negative impact on the environment, public safety, and the visual quality of the neighborhood. Currently, the foundation wall of the mill borders the Presumpscot River and a significant amount of trash and debris is found in the river. Previously in June 2005 a VRAP was approved by the DEP to demolish the building and cleanup the contamination associated with the mill. Once the Village at Little Falls project is approved, the mill building will be removed and the banks of the Presumpscot River will be restored to its natural state. As part of the project, the debris will be removed from the river's edge and the riverbank will be graded to create a stable slope. As a result of this restoration, 4,800 square feet of the Presumpscot River will be impacted.

The removal of the mill structure and the restoration of the shoreline will create additional flood plain storage area. The additional storage created by the shoreline restoration is equivalent to the volume of fill proposed along the Presumpscot River. Therefore, additional compensation is not required.

The project also results in the filling of 740 square feet of a freshwater wetland. The wetland consists of a man-made drainage channel that was created by the output of a culvert from an eastern abutter. Mary Beth Richardson of the DEP and Jim Pellerin of IF&W determined that the channel flow across the property was a man made channel during their site visit on January 22, 2007. The stormwater from this culvert will be redirected to the Village at Little Falls' catchbasin system.

Stormwater run-off from the site will be cooled in an underground detention system and treated by a filtration system prior to discharge. The discharge point of this treatment system is located near the Presumpscot River. The pipe is located above the 100-year flood elevation of the river and riprap will be installed at the outlet of the pipe as a protection against erosion.

The areas of wetland impact are depicted on the attached grading and drainage plans (8 1/2 x 11 copies of these plans are included in Attachment 5 and 6).



## ATTACHMENT 2

### ALTERNATIVE ANALYSIS & STATEMENT OF MINIMIZATION

The proposed project results in three wetland-impacting activities. These activities include:

- Fill within the Presumpscot River totaling 4,800 square feet
  - Discharge of stormwater drainage pipe within 75 feet of the Presumpscot River
  - Fill within a freshwater wetland totaling 750 square feet
- Total Wetland Impact = 5,540 square feet

In each case, the alterations to the wetlands were limited to the minimum amount necessary to complete the project.

#### *Presumpscot River Shoreline Restoration Impact*

The fill within the Presumpscot River is necessary in order to create a natural and stable slope after the removal of the mill building. The environmental benefits of removing the mill building will more than offset the impact from the shore restoration. Originally, it had been the intent of the project to leave the wall of the mill building standing and fill behind it. After meeting with IF&W we are proposing to raze the mill and restore this area of riverbank.

The removal of the mill structure and the restoration of the shoreline will also create flood plain storage area. The additional storage created by the shoreline restoration is equivalent to the volume of fill proposed along the Presumpscot River. Therefore, additional compensation is not required.

#### *Stormwater Discharge to the Presumpscot River*

The proposed location of the stormwater discharge pipe is necessary for proper functioning of the treatment system. The discharge from the drainage system will have little environmental impact on the river. Erosion Control Measures will be installed at the outlet of the system; the discharge point will be above the 100-year flood elevation; the water will be cooled prior to discharge, and the rate of stormwater run-off into the river is less than or equal to the pre-development discharge rate.

#### *Man-made Channel Impact*

The 740 sf disturbance of the freshwater wetland onsite is unavoidable. Due to the long, meandering nature of this wetland, the disturbance could not be avoided by changing the site configuration, density, or layout. This wetland is caused by a man-made drainage channel resulting from the installation of a culvert near the eastern property line. The discharge from this culvert will be redirected to the proposed catchbasin system.

The development will have a net positive environmental impact on the site. The removal of the old mill building and the restoration of the riverbank will aid in cooling the Presumpscot River, thereby improving fish and wildlife habitat. In addition, the



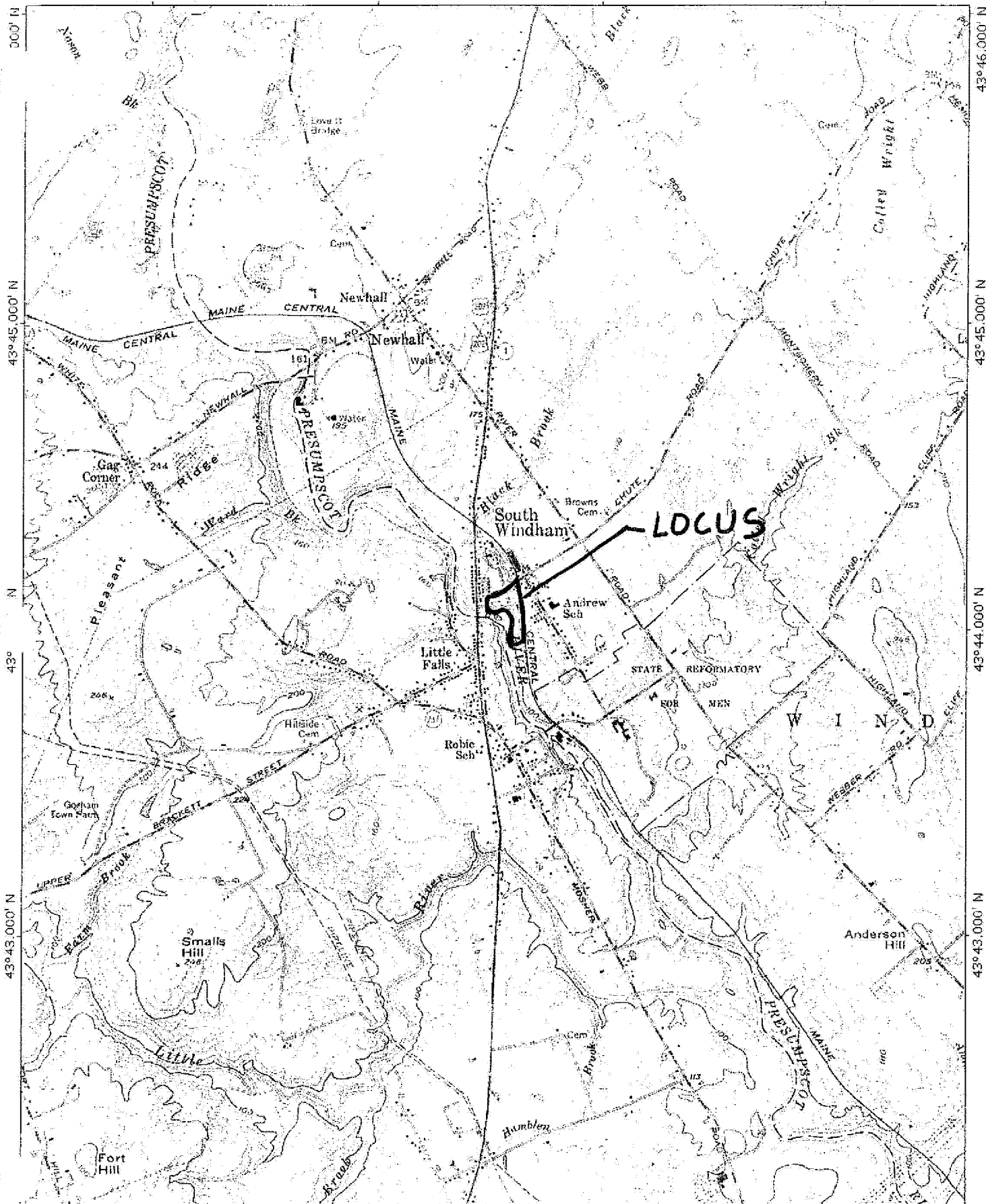
demolition of the old mill building and the associated site clean up will result in the removal of many pollutants from the site. The applicant has received a "Voluntary Response Action Program" (VRAP) permit from the Maine Department of Environmental Protection for the site clean up effort. A copy of the VRAP is included in Attachment 7.

VIL\_RESP04019



**ATTACHMENT 3**  
**LOCATION MAP**

**VIL\_RESP04021**





**ATTACHMENT 4**

**PHOTOGRAPHS**



**Figure 1: Area of River Fill – Looking Down from the Existing Mill Building**



**Figure 2: Along the River's Edge Looking at the Existing Power Station**

**VIL\_RESP04024**



## **ATTACHMENT 5**

### **PLANS**

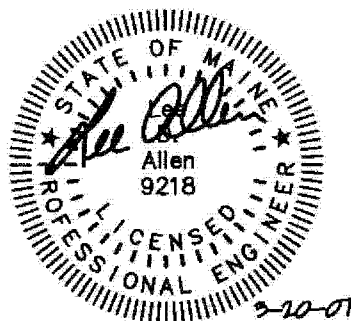
Please refer to the attached planset for information regarding the site layout, the wetland impacts, erosion control measures, and additional details regarding the proposed development. An 8-½ x11 copy of these plans are also included as Attachment 5.



# VILLAGE AT LITTLE FALLS SOUTH WINDHAM, MAINE

## SHEET INDEX

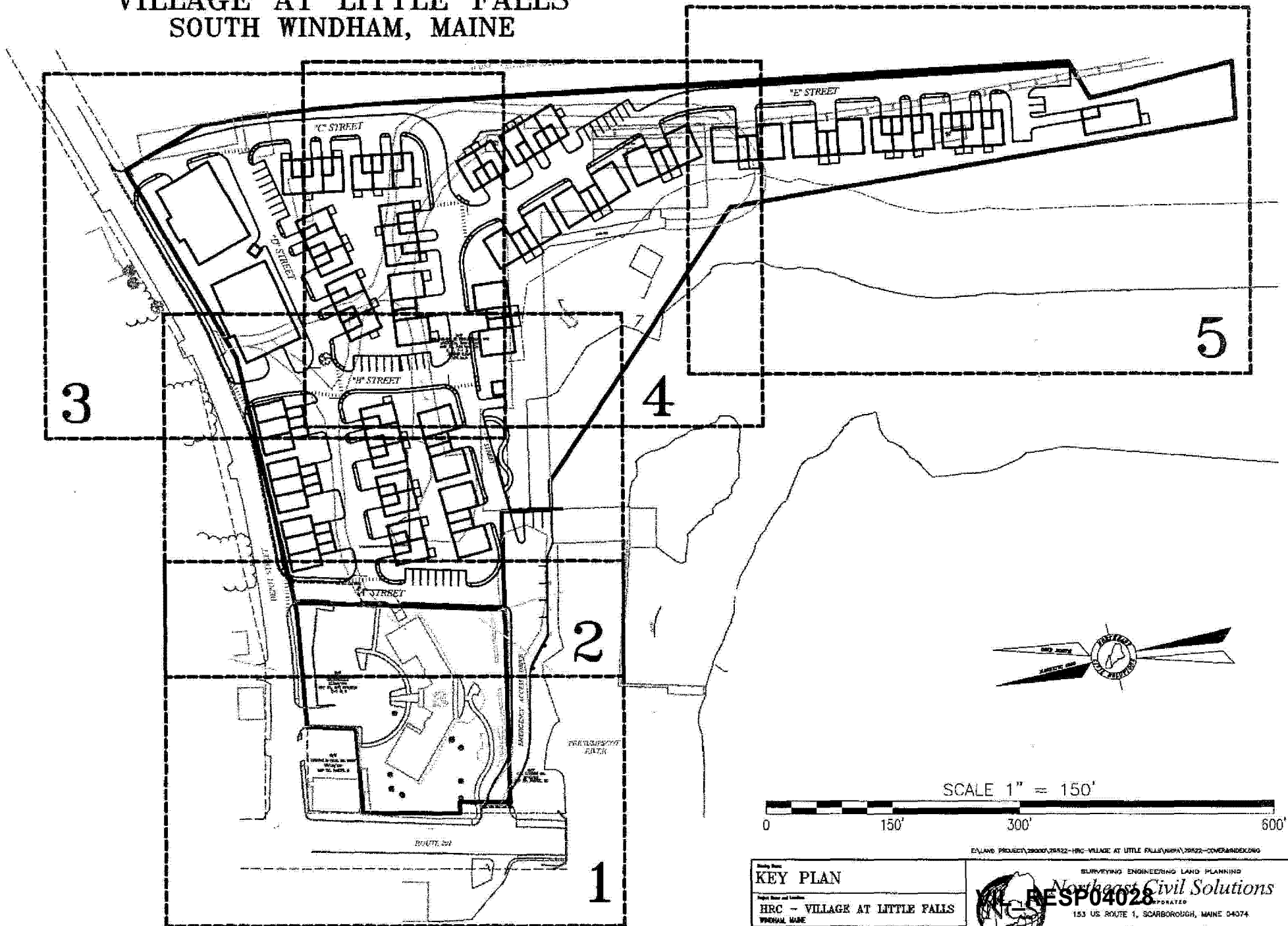
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|--|---------------------------------------|-----------------------------|
| 1. SHEET INDEX/COVER                   | 13. GRADING & DRAINAGE PLAN — SHEET 3 | 25. EROSION NOTES #5        |
| 2. KEY PLAN                            | 14. GRADING & DRAINAGE PLAN — SHEET 4 | 26. EROSION DETAILS         |
| 3. VICINITY MAP/ZONING                 | 15. GRADING & DRAINAGE PLAN — SHEET 5 | 27. EROSION DETAILS         |
| 4. ABUTTERS                            | 16. EROSION CONTROL PLAN — SHEET 1    | 28. EROSION DETAILS         |
| 5. LEGEND                              | 17. EROSION CONTROL PLAN — SHEET 2    | 29. EROSION DETAILS         |
| 6. EXISTING CONDITIONS PLAN — SHEET 1  | 18. EROSION CONTROL PLAN — SHEET 3    | 30. EROSION DETAILS         |
| 7. EXISTING CONDITIONS PLAN — SHEET 2  | 19. EROSION CONTROL PLAN — SHEET 4    | 31. EROSION DETAILS         |
| 8. EXISTING CONDITIONS PLAN — SHEET 3  | 20. EROSION CONTROL PLAN — SHEET 5    | 32. EROSION DETAILS         |
| 9. EXISTING CONDITIONS PLAN — SHEET 4  | 21. EROSION NOTES #1                  | 33. EROSION DETAILS         |
| 10. EXISTING CONDITIONS PLAN — SHEET 5 | 22. EROSION NOTES #2                  | 34. EROSION DETAILS         |
| 11. GRADING & DRAINAGE PLAN — SHEET 1  | 23. EROSION NOTES #3                  | 35. TYPICAL ROADWAY SECTION |
| 12. GRADING & DRAINAGE PLAN — SHEET 2  | 24. EROSION NOTES #4                  |                             |



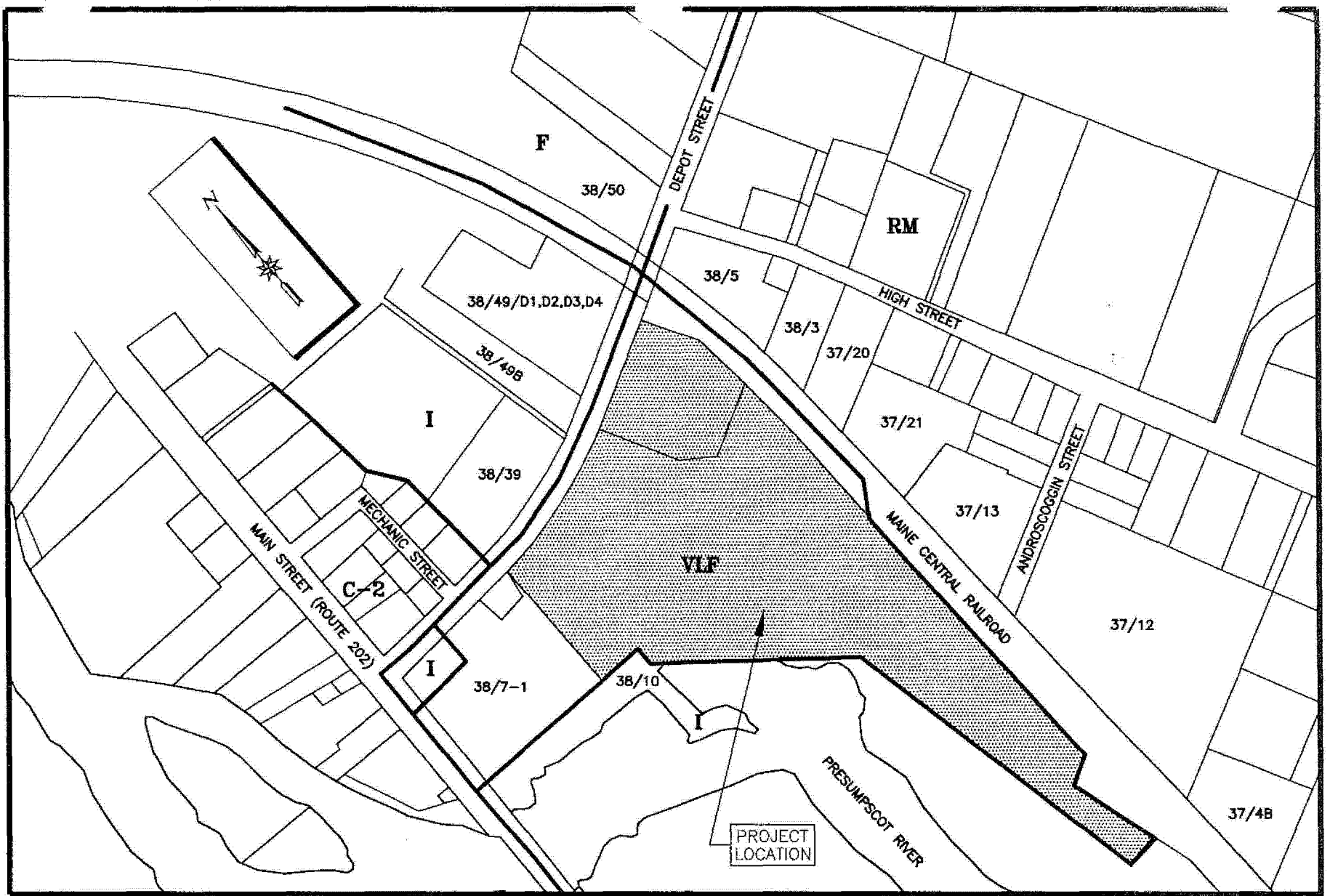
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<b>SHEET INDEX/COVER</b> <small>Print Name and Location:</small> <b>HRC — VILLAGE AT LITTLE FALLS</b> <b>WINDHAM, MAINE</b>			<b>INC. Northeast Civil Solutions</b> <small>INCORPORATED</small> 153 US ROUTE 1, SCARBOROUGH, MAINE 04074 Tel: 207.883.1200 Fax: 207.883.1001 E-mail: info@northeastcivilsolutions.com
<small>Date:</small> MARCH 26, 2007	<small>Sheet:</small> 1 of 35		

# VILLAGE AT LITTLE FALLS SOUTH WINDHAM, MAINE



<b>KEY PLAN</b> Project Name and Location: <b>HRC - VILLAGE AT LITTLE FALLS</b> WINDHAM, MAINE DATE: MARCH 20, 2007		 <b>RESP04028</b> SURVEYING ENGINEERING LAND PLANNING INCORPORATED 153 US ROUTE 1, SCARBOROUGH, MAINE 04074 Tel: 207.883.1000 Fax: 207.883.1001 e-mail: info@northeastcivilsolutions.com 800.883.2227
SHEET: 2 OF 35		



## ZONING LEGEND

- RM** = MEDIUM DENSITY RESIDENTIAL DISTRICT  
**I** = CONTRACT ZONE  
**F** = FARM DISTRICT  
**C-2** = COMMERCIAL DISTRICT II  
**VLF** = VILLAGE AT LITTLE FALLS CONTRACT ZONE

## VICINITY MAP/ZONING

SCALE: 1" = 250'

<b>VICINITY MAP/ ZONING</b> Project Name and Location: <b>HRC - VILLAGE AT LITTLE FALLS</b> VILLAGE, MAINE DATE: MARCH 20, 2007		SHEET: 3 OF 35
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 SURVEYING ENGINEERING LAND PLANNING  
**Northeast Civil Solutions**  
 INCORPORATED  
 153 US ROUTE 1, SCARBOROUGH, MAINE 04074  
 Tel: 207.863.0000 Fax: 207.863.1001 e-mail: info@necivilsolutions.com  
 860.862.2227

# ABUTTERS

ASSESSOR'S MAP	PARCEL NUMBER	OWNER'S NAME
37	4B	CHRISTOPHER V. CAPUTO 7 VAN TASSEL DRIVE, WINDHAM, MAINE 04062
37	12	LESTER A. & MARY COULOMBE 12 ANDROSCOGGIN STREET, WINDHAM, MAINE 04062
37	37/13	WALTER W. & SANDRA THORPE 11 ANDROSCOGGIN STREET, WINDHAM, MAINE 04062
37	20	JANET G. FOSTER 18 ASH STREET, WESTBROOK, MAINE 04062
37 38	21 3	MERRILL T. & CARMELA LASKEY 68 HIGH STREET, WESTBROOK, MAINE 04062
38	5	MARJORIE DROST P.O. BOX 105, WINDHAM, MAINE 04062
38	7-1	SOUTH WINDHAM HOUSING CORP 307 CUMBERLAND AVE, PORTLAND, MAINE 04101
38	10	S. D. WARREN CO. PO BOX 5000, WESTBROOK, MAINE 04094
38	39	VA REGIONAL OFFICE - SEC OF VET AFFAIRS P.O. BOX 345, PORTLAND, MAINE 04101
38	49B	MCL REALTY LLC 33 MAIN STREET, WINDHAM, MAINE 04062
38	49/D1	MARIE FARRINGTON 22 BROOKSIDE DRIVE, FALMOUTH, MAINE 04105
38	49/D2 49/D4	GERARD P. GIGUERE JR. & PATRICIA M. GIGUERE P.O. BOX 1272, WINDHAM, MAINE 04062
38	49/D3	JOHN W. GORE 257 VARNEY MILL ROAD, WINDHAM, MAINE 04062
38	50	JFG ENTERPRISES PO BOX 39, LEBANON, MAINE 04027

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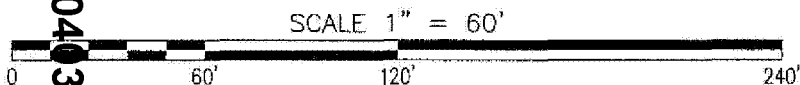
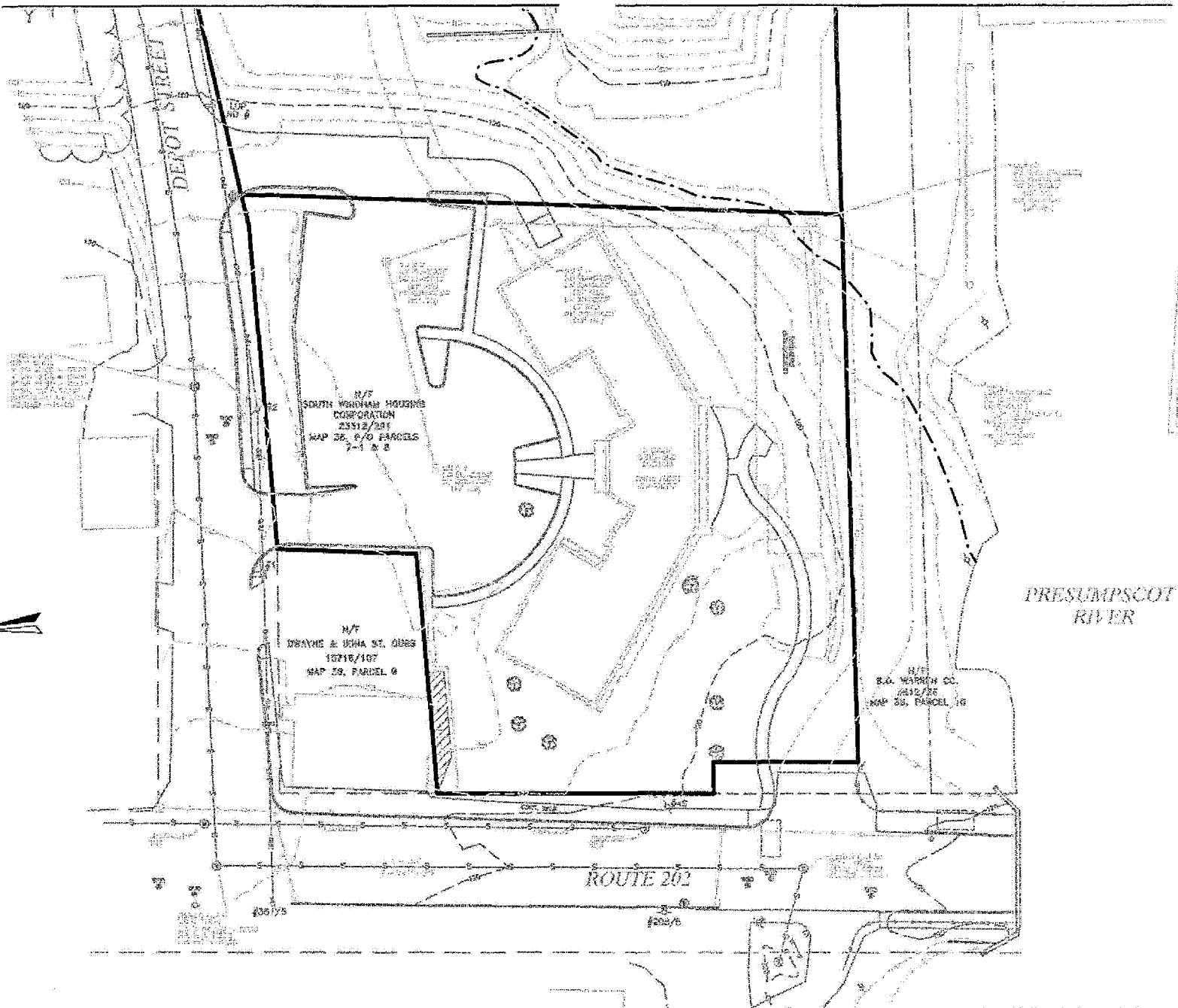
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DATE: MARCH 20, 2007	SHEET: 4 OF 35	

# LEGEND

	BOUNDARY LINE		EXISTING 100 YEAR FLOOD PLAIN
	EDGE OF PAVEMENT		PROPOSED CONTOUR
	EXISTING EDGE OF GRAVEL		APPROXIMATE CONTOURS OF DEPOT STREET IMPROVEMENT PROJECT BY MDOT & PWD
	RIGHT-OF-WAY LINE		VEGETATIVE BUFFER TO RIVER
	EDGE OF WETLANDS		PROPOSED RIP RAP
	EXISTING EASEMENT		
	UTILITY POLE		
	EXISTING HYDRANT		SILT FENCE
	EXISTING OVERHEAD UTILITY		STABILIZED CONSTRUCTION ENTRANCE
	EXISTING WATER LINE		CATCH BASIN INLET PROTECTION
	EXISTING SEWER LINE		HAY BALE BARRIER
	EXISTING DRAIN LINE		EROSION CONTROL MATTING
	SOIL BOUNDARY		4' ORANGE PVC CONSTRUCTION FENCING
	EXISTING STREET LIGHT		
	EXISTING GUARDRAIL		
	EXISTING CONTOUR		

Study Area: <b>LEGEND</b>		E:\LAND PROJECT\2000\20522-HRC-VILLAGE AT LITTLE FALLS\NHPA\20522-COVERAGE\LEGEND.DWG	
Project Name and Location: <b>HRC - VILLAGE AT LITTLE FALLS</b> VERMONT, MAINE		SURVEYING ENGINEERING LAND PLANNING <b>Northeast Civil Solutions</b> INCORPORATED 153 US ROUTE 1, SCARBOROUGH, MAINE 04074	
DATE: MARCH 28, 2007	SHEET: 5 OF 35	Tel: 207.863.1000 800.582.2222	Fax: 207.863.1001 e-mail: info@necsolutions.com

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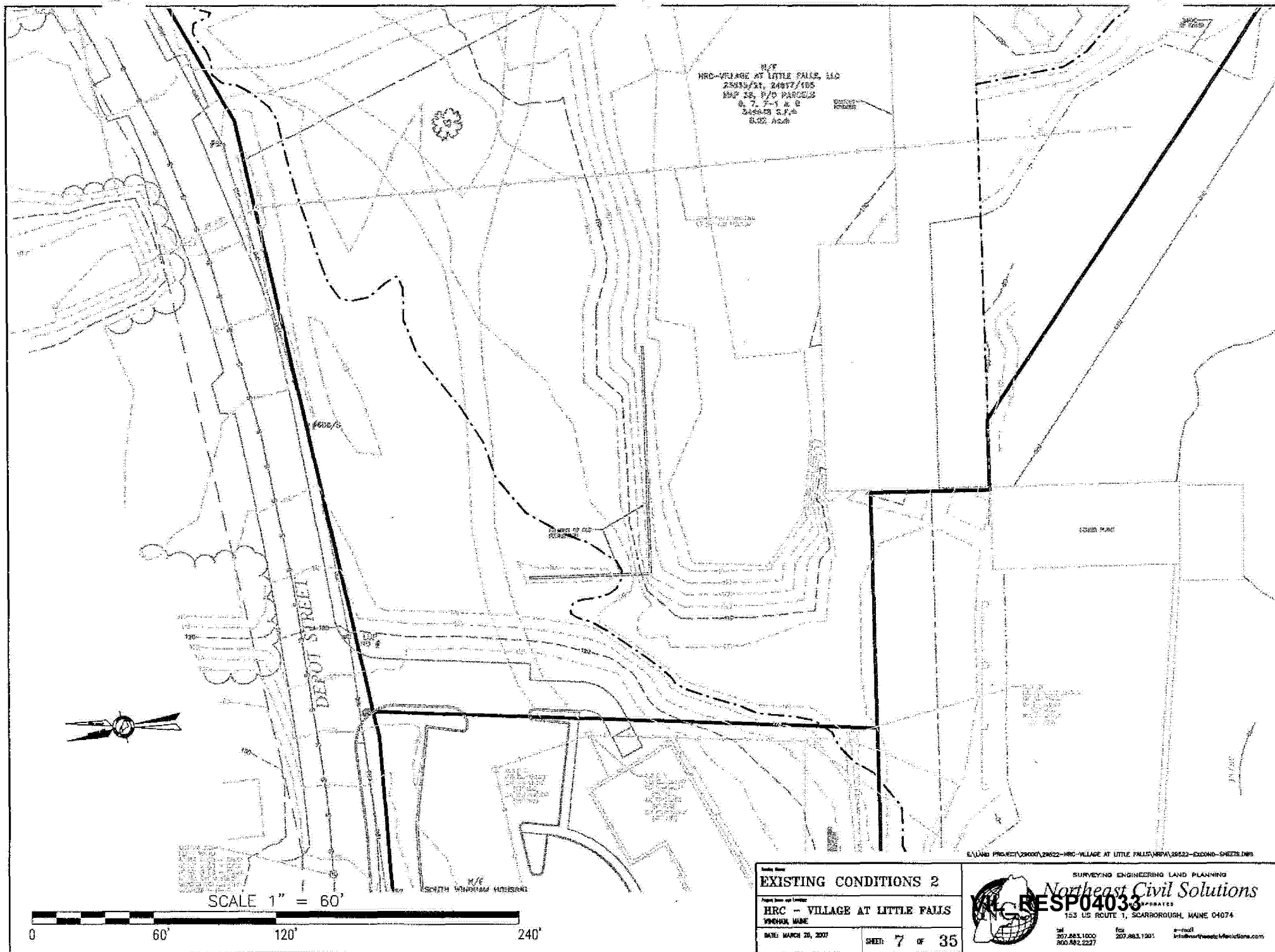


<b>EXISTING CONDITIONS 1</b>	
<b>HRC - VILLAGE AT LITTLE FALLS</b>	
<b>DATE: MARCH 30, 2007</b>	
<b>SHEET: 6</b>	<b>OF 35</b>

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 804.883.1327



H/F  
HRC-VILLAGE AT LITTLE FALLS, LLC  
25333/31, 24877/155  
153 US, P/O PARCELS  
8, 7, 2-1 & 2  
346623 S.F. 0.02 ACRES

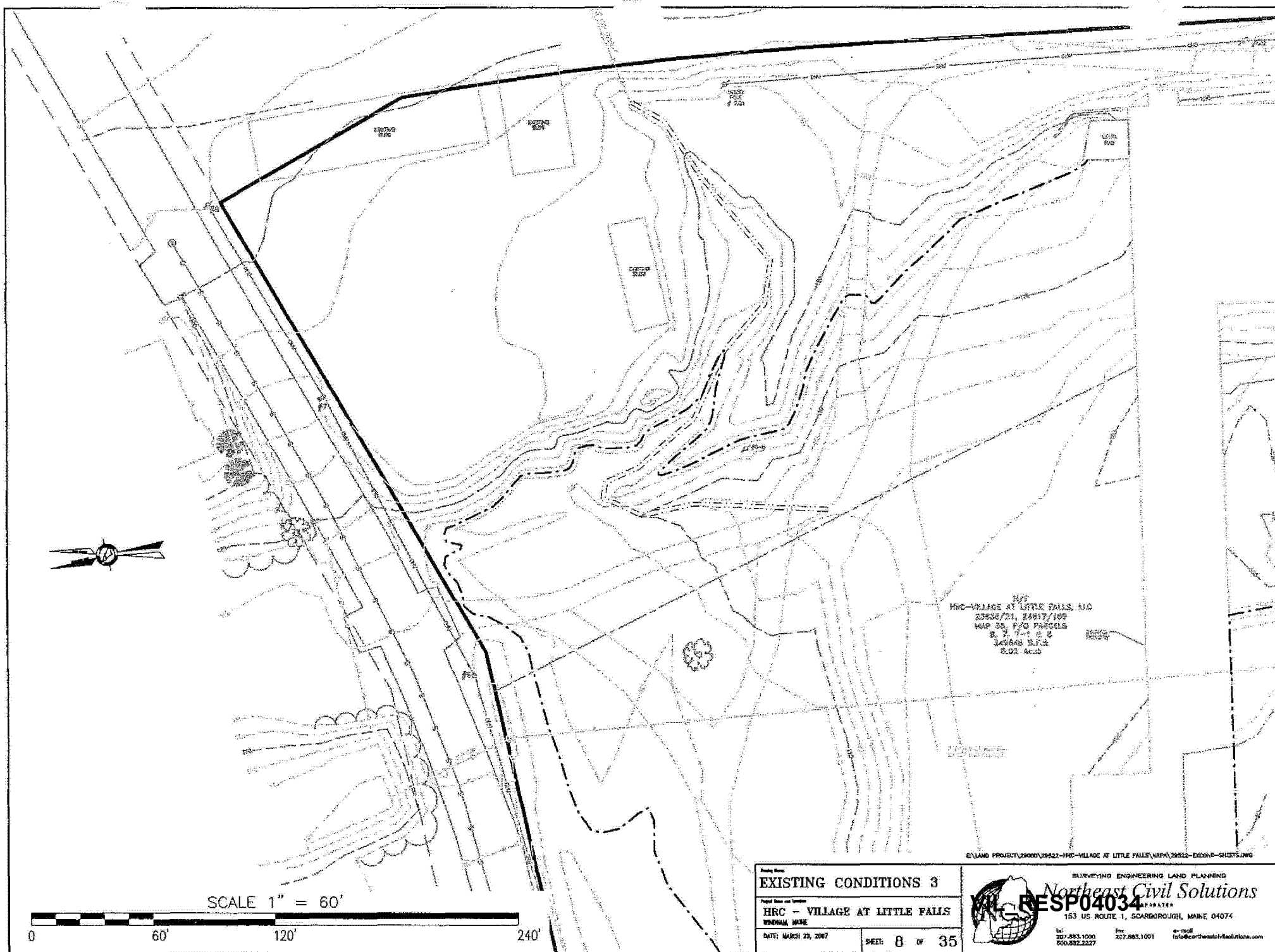
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ROAD 1

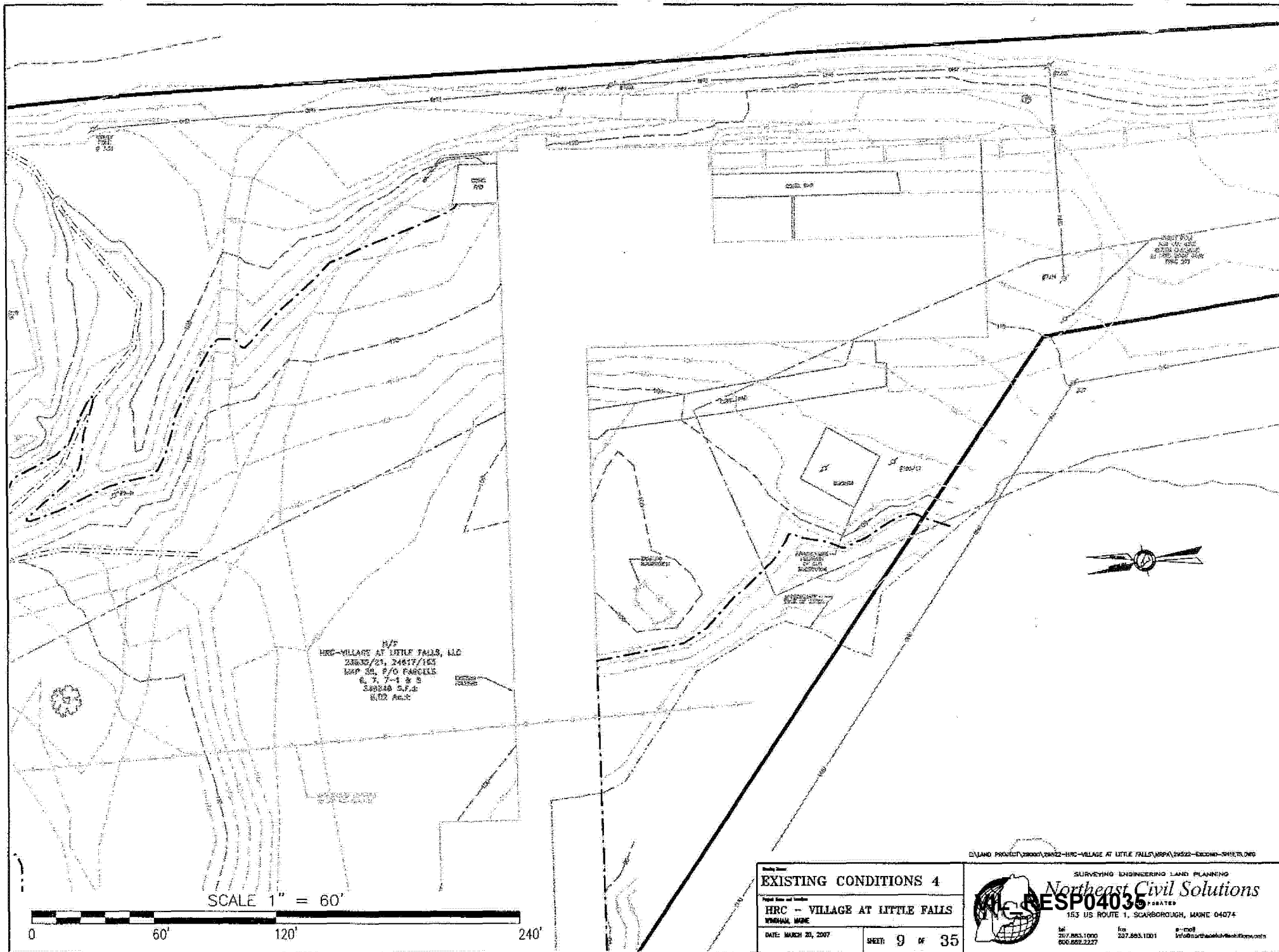
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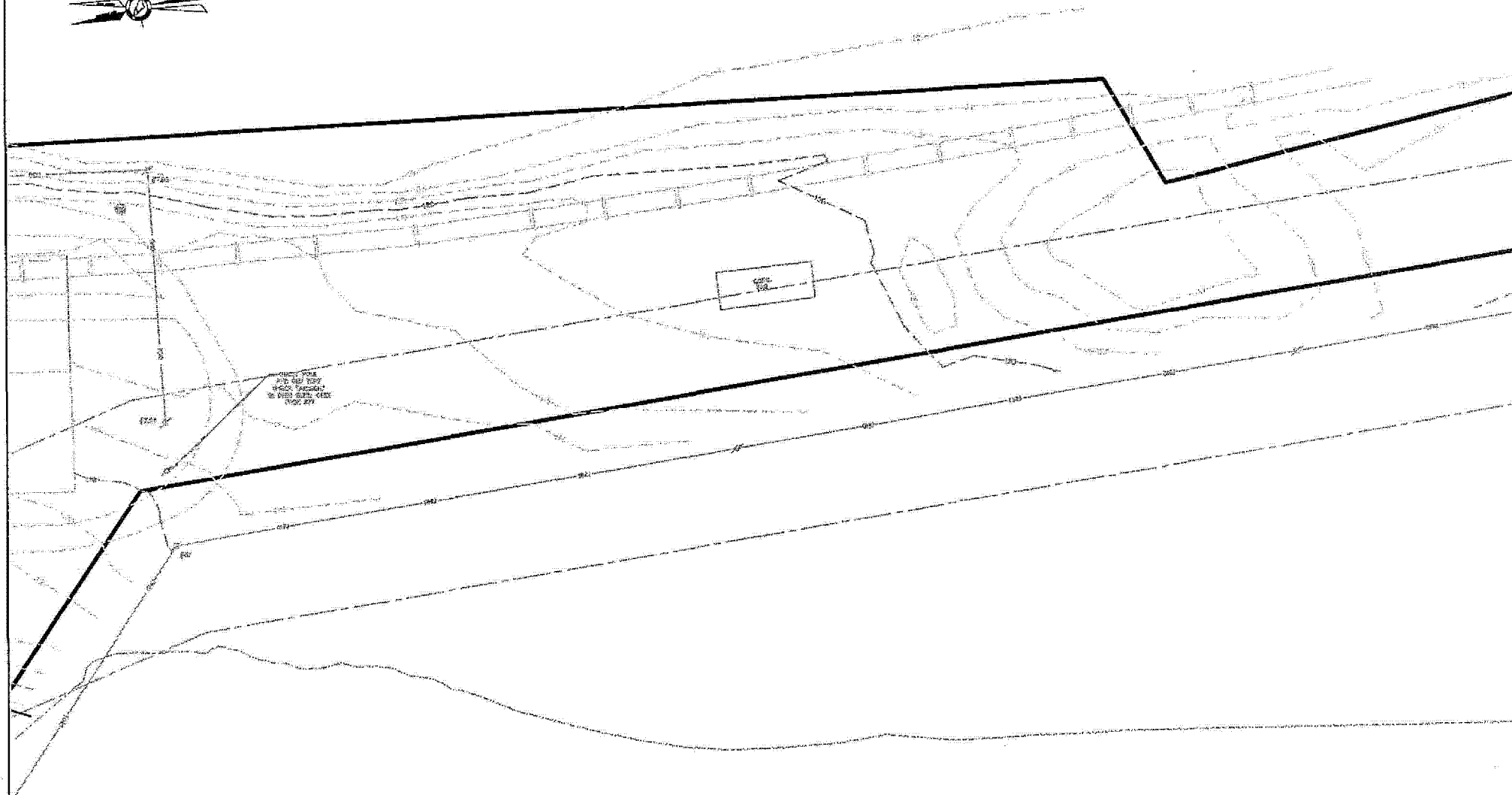


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<b>DATE:</b> MARCH 20, 2007	<b>SHEET:</b> 7 OF 35
 <b>Northeast Civil Solutions</b> INCORPORATED 153 US ROUTE 1, SCARBOROUGH, MAINE 04074 tel: 207.883.1000 fax: 207.883.1301 e-mail: info@northeastcivilsolutions.com	





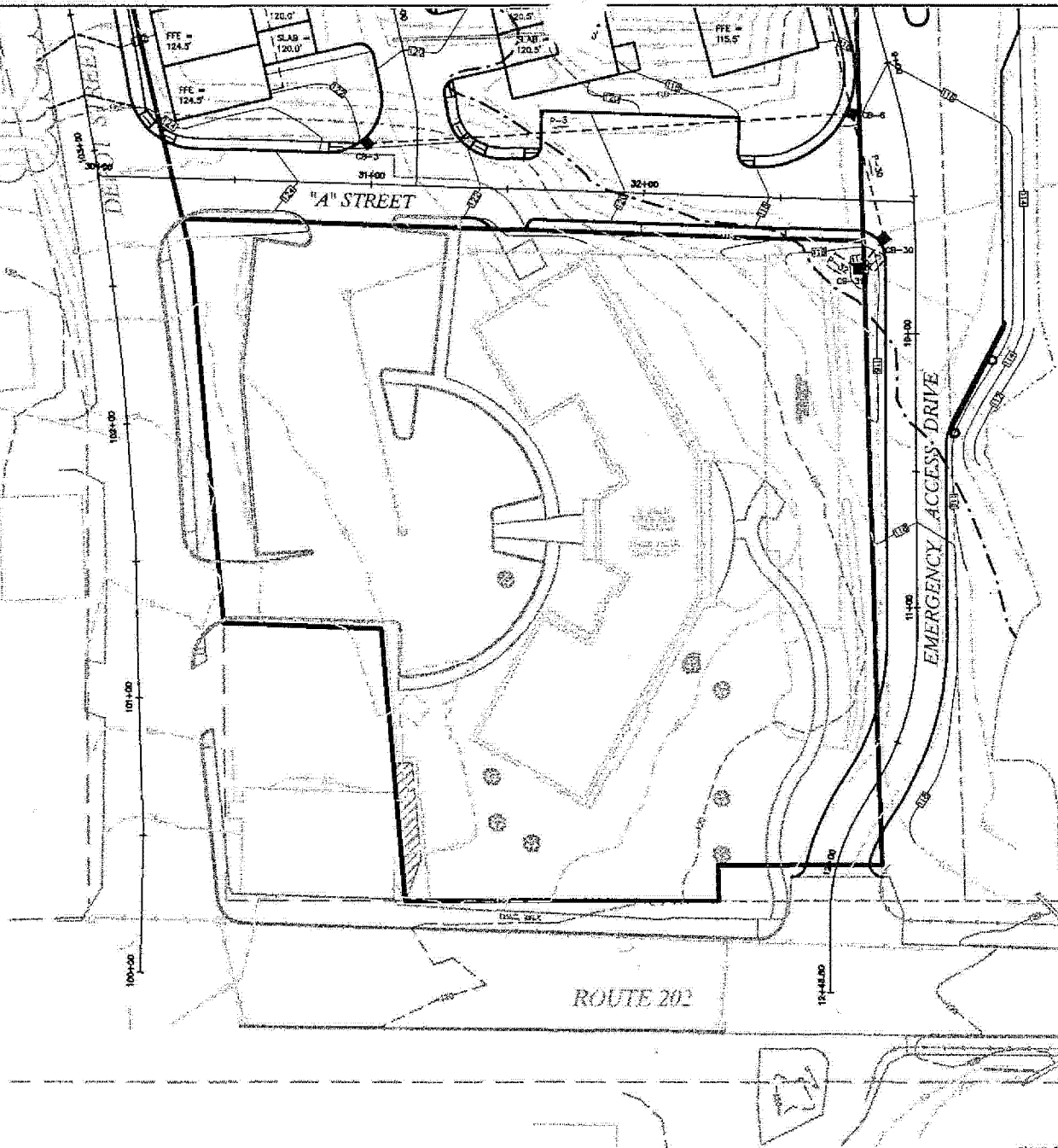




COORDINATE GRADE LOCATIONS  
WITH THE PORTLAND WATER DISTRICT  
DEPOT STREET IMPROVEMENT PROJECT



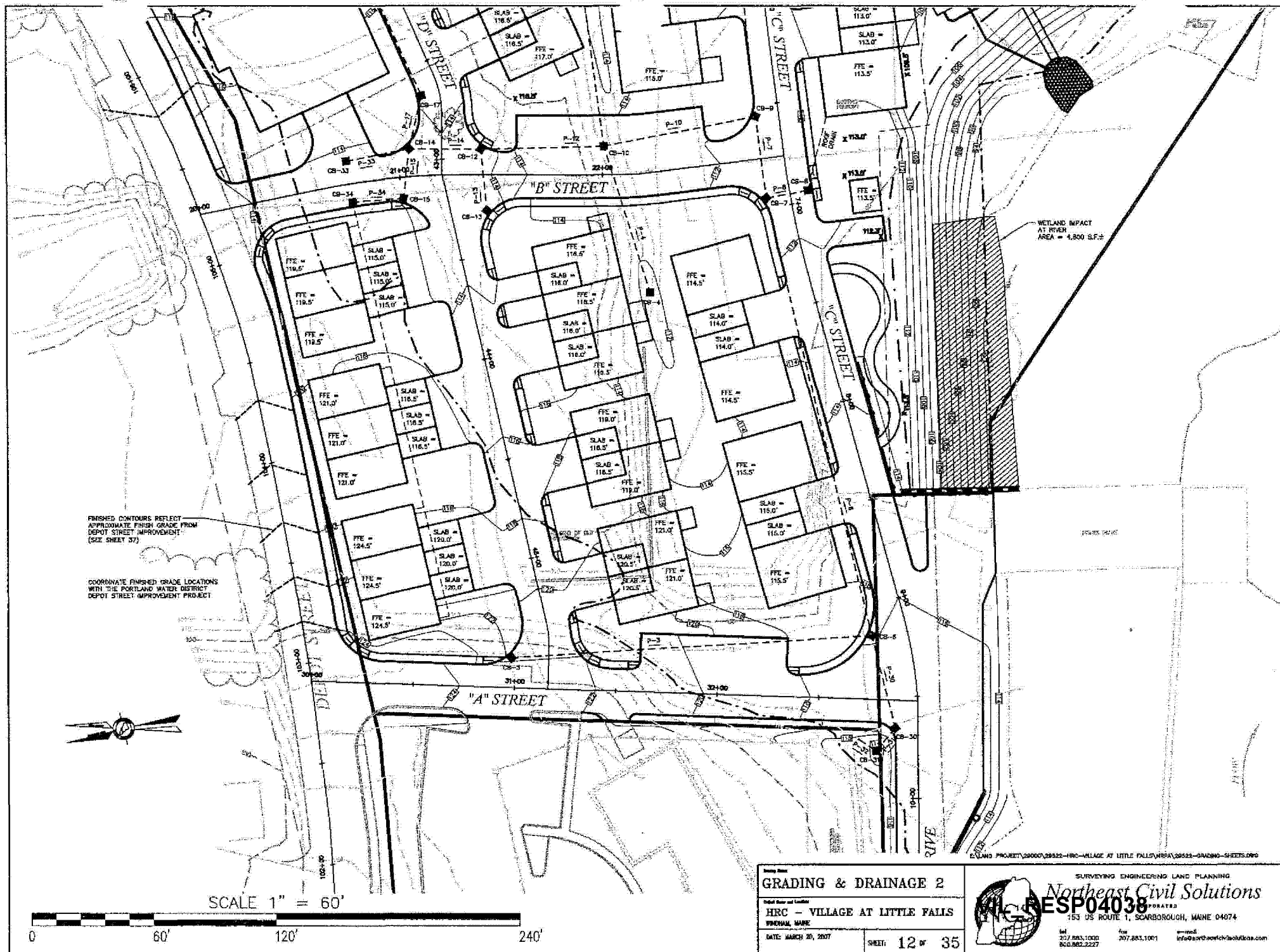
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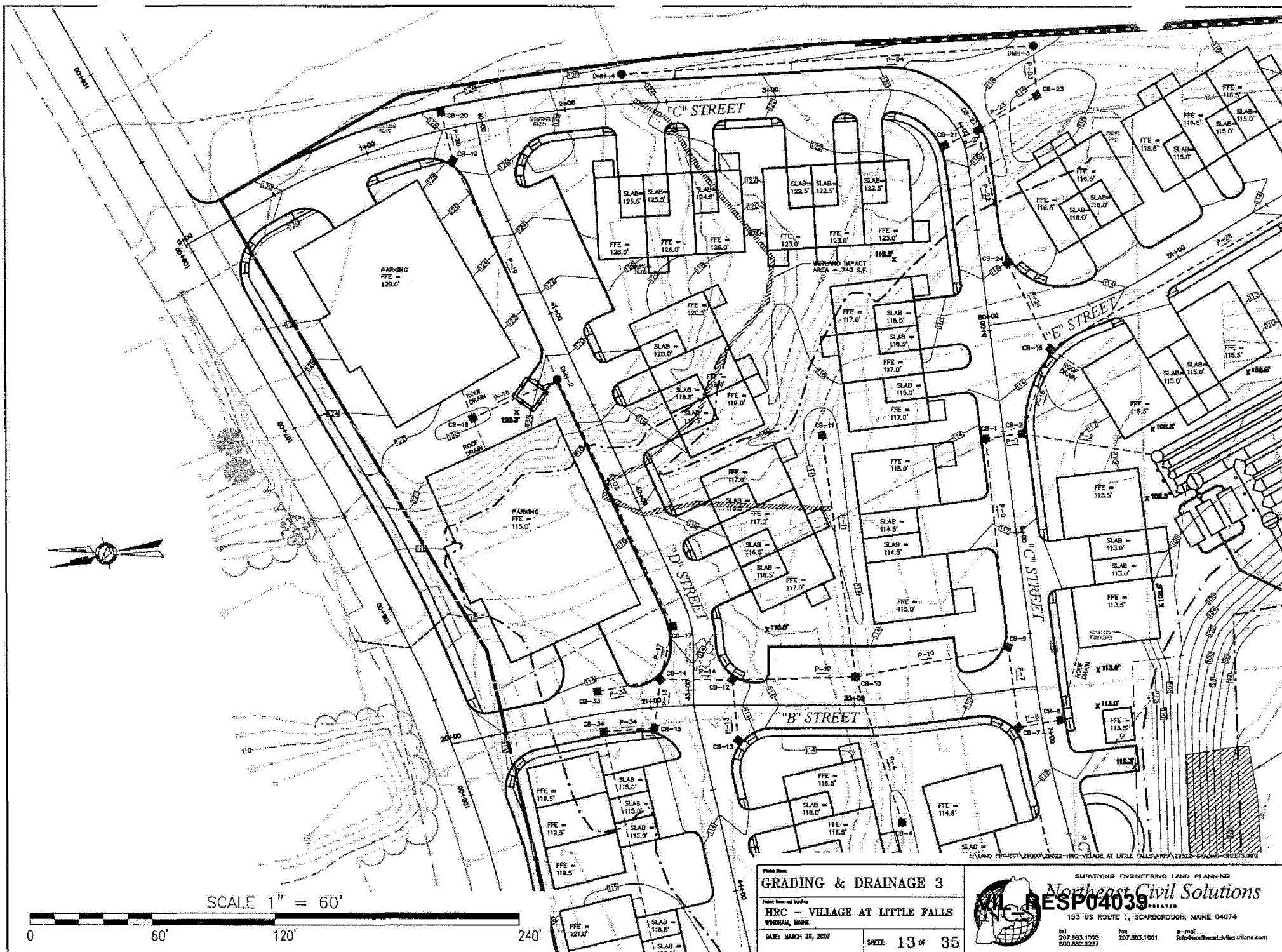


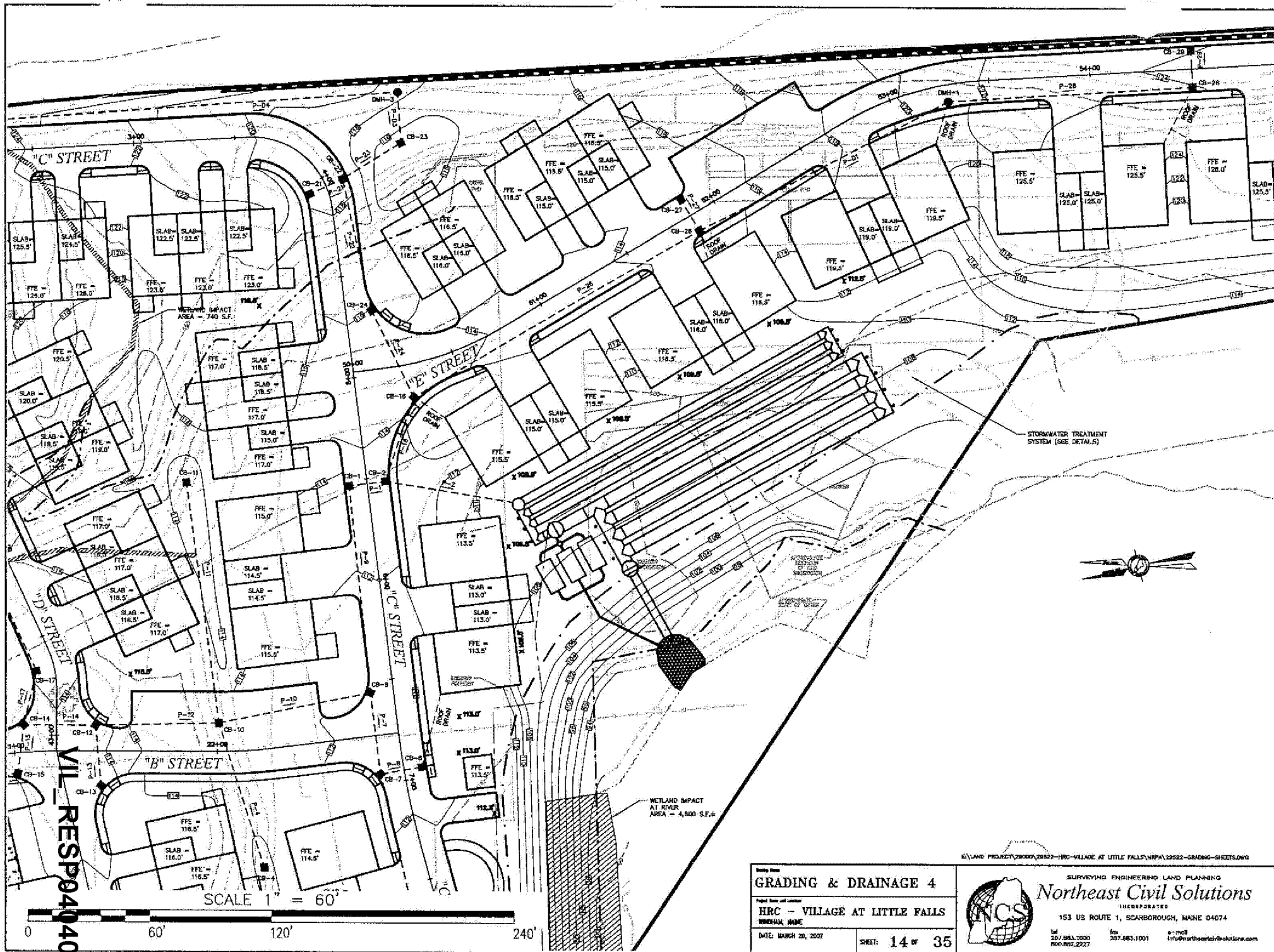
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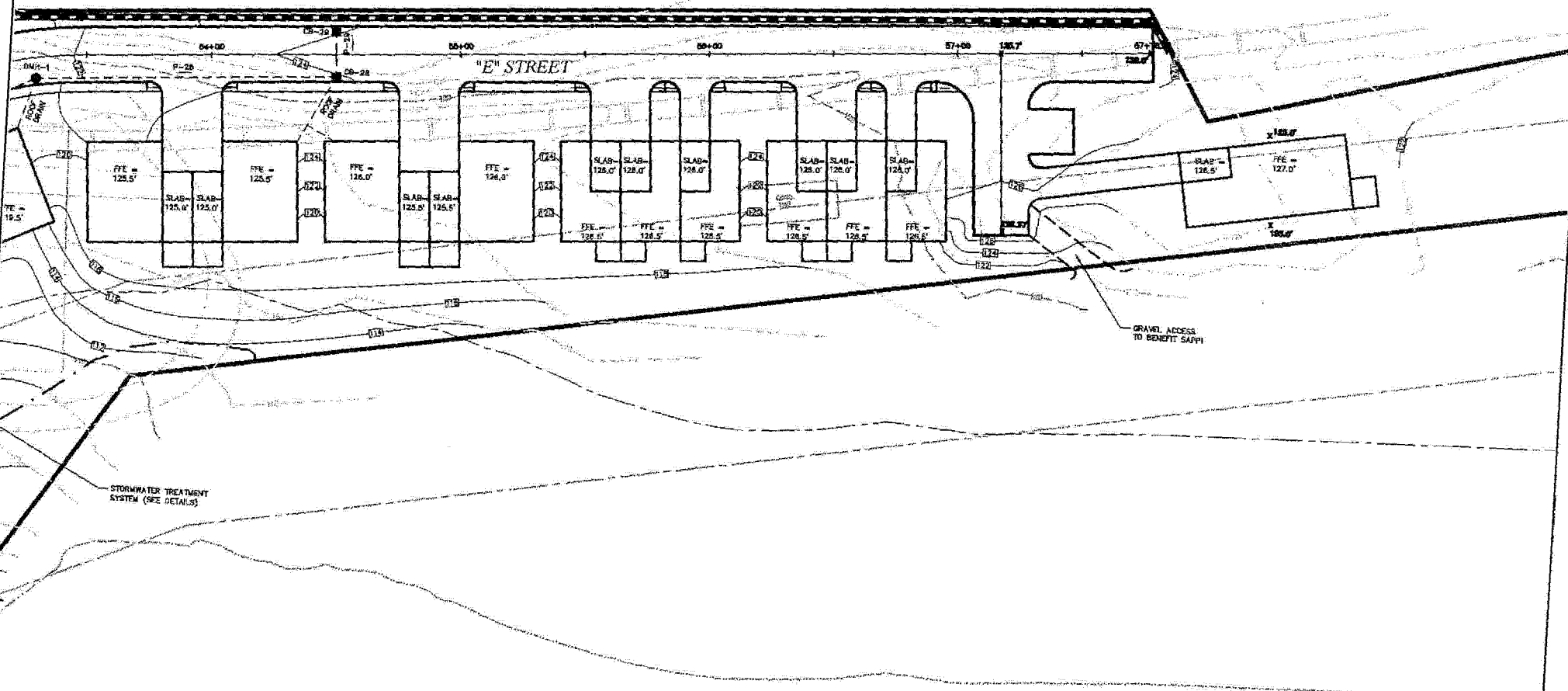
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SHEET: 11 OF 35	

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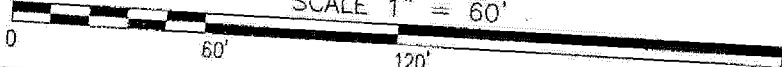




STORMWATER TREATMENT  
SYSTEM (SEE DETAILS)

GRAVEL ACCESS  
TO BENEFIT SAFF

SCALE 1" = 60'



240'

Drawing Name: <b>GRADING &amp; DRAINAGE 5</b>	
Project Name and Location: <b>HRC - VILLAGE AT LITTLE FALLS</b>	
Worksheet Name: <b>WORKSHEET</b>	
Date: <b>MARCH 20, 2007</b>	Sheet: <b>15 of 35</b>

2/LAND PROJECT/2007/25432-HRC-VILLAGE AT LITTLE FALLS/WORKSHEETS/GRADING-SHEETS.DWG

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STABILIZED  
CONSTRUCTION  
ENTRANCE



APPROX. LIMITS OF  
PRE-LOAD AREA

CATCH BASIN INLET  
PROTECTION OR SILT  
BACK (TYP)

PRESUMPSCOT  
RIVER

STABILIZED  
CONSTRUCTION  
ENTRANCE

ROUTE 202

SCALE 1" = 60'



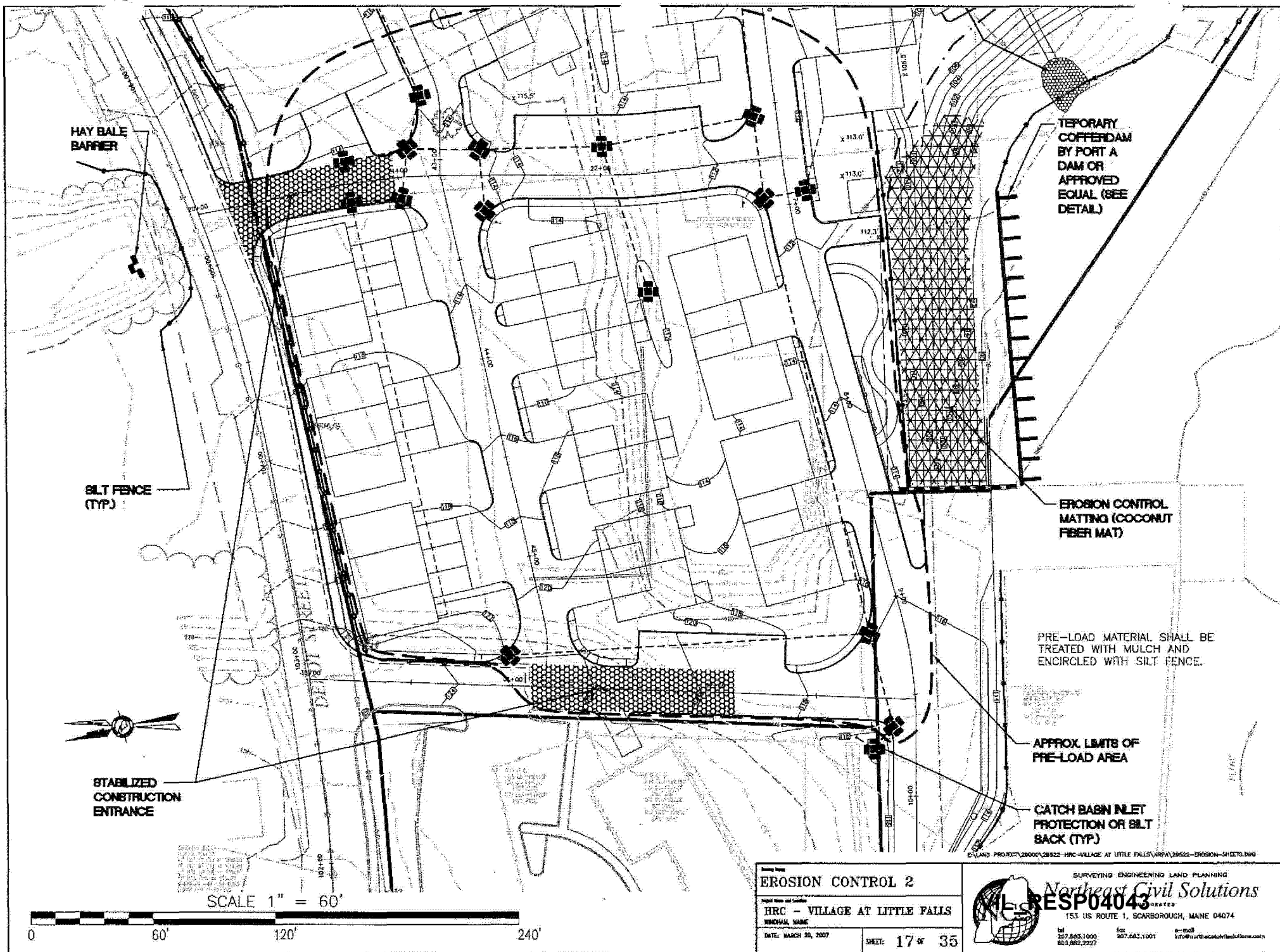
PLAN PROJECT/28007/28527-HRC-VILLAGE AT LITTLE FALLS/MPA/28527-EROSION-SHEETS.DWG

<p>Block Sheet</p> <p><b>EROSION CONTROL 1</b></p> <p>FROM: NEW AND EXISTING</p> <p><b>HRC - VILLAGE AT LITTLE FALLS</b></p> <p>WINDHAM, MAINE</p> <p>DATE: MARCH 25, 2007</p>	
<p>SHEET: 16 of 35</p>	



SURVEYING ENGINEERING LAND PLANNING  
**Northeast Civil Solutions**  
OPERATOR  
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**EROSION CONTROL 2**

Project Name and Location  
**HRC - VILLAGE AT LITTLE FALLS**  
 BRENDA, MAINE

DATE: MARCH 30, 2007

SURVEYING ENGINEERING LAND PLANNING

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CATCH BASIN INLET  
PROTECTION OR BILT  
BACK (TYP.)

STABILIZED  
CONSTRUCTION  
ENTRANCE

HAY BALE  
BARRIER

SCALE 1" = 60'

0 60' 120' 240'

### EROSION CONTROL 3

HRC - VILLAGE AT LITTLE FALLS  
WINDHAM, MAINE

DATE: MARCH 28, 2007

SHEET: 18 of 35



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E:\LAND PROJECT\2000\2002-HRC-VILLAGE AT LITTLE FALLS\HRC\2002-EROSION-SHEETS.DWG

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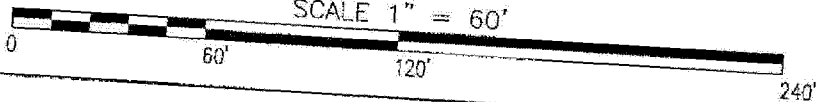




CATCH BASIN INLET  
PROTECTION OR SILT  
BACK (TYP.)

SILT FENCE  
(TYP.)

SCALE 1" = 60'



Project Name: <b>EROSION CONTROL 5</b>		E:\LAND PROJECT\2000\2002\HRC-VILLAGE AT LITTLE FALLS\NHPA\2002-EROSION-SHEETS.DWG	
Project Site: at Location: <b>HRC - VILLAGE AT LITTLE FALLS</b>		SURVEYING ENGINEERING LAND PLANNING	
<b>YIMHAM, MAINE</b>		<b>Northeast Civil Solutions</b>	
DATE: MARCH 20, 2007		153 US ROUTE 1, SCARBOROUGH, MAINE 04074	
SHEET: 20 of 35		TEL: 207.353.1000 FAX: 207.353.1001 WWW: info@northeastcivilsolutions.com	

# EROSION AND SEDIMENTATION CONTROL PLAN

## INTRODUCTION

THE FOLLOWING PLAN FOR CONTROLLING SEDIMENTATION AND EROSION FROM THIS PROJECT IS BASED UPON SOUND CONSERVATION PRACTICES, AND ADHERES TO THE STANDARDS DETAILED IN THE MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION DATED MARCH 2003. THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH THE AFOREMENTIONED PUBLICATION AND COMPLY WITH THE PRACTICES PRESENTED THEREIN.

THIS REPORT ADDRESSES THE EROSION CONTROL MEASURES TO BE APPLIED TO THE PROPOSED SITE WORK FOR THE PROJECT. REFERENCE IS MADE TO THE EROSION CONTROL EXHIBITS, SHOWING THE LOCATIONS OF PROPOSED MEASURES INCLUDED IN THIS REPORT.

## GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES

### 1. EROSION/SEDIMENT CONTROL DEVICES

THE FOLLOWING EROSION SEDIMENTATION CONTROL DEVICES ARE PROPOSED FOR CONSTRUCTION ON THIS PROJECT. INSTALL THESE DEVICES AS INDICATED ON THE PLANS.

1.1 SILT FENCE: SILT FENCE WILL BE INSTALLED ALONG THE DOWNGRAIENT EDGES OF DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL THE SITE IS STABILIZED. IN AREAS WHERE STORMWATER DISCHARGES THE SILT FENCE WILL BE REINFORCED WITH HAY BALES TO HELP MAINTAIN THE INTEGRITY OF THE SILT FENCE AND TO PROVIDE ADDITIONAL TREATMENT.

1.2 HAY BALES PLACED IN DRAINAGE SWALES AND PATHS TO TRAP SEDIMENTS AND REDUCE RUNOFF VELOCITIES.

1.3 RIPRAP: PROVIDE RIPRAP IN AREAS WHERE SLOPES ARE STEEPER THAN 2:1 AND AS SHOWN ON THE PLANS.

1.4 LOAM, SEED, & MULCH: ALL DISTURBED AREAS, WHICH ARE NOT OTHERWISE TREATED, SHALL RECEIVE PERMANENT SEEDING AND MULCH TO STABILIZE THE DISTURBED AREAS. THE DISTURBED AREAS WILL BE REVEGETATED WITHIN 5 DAYS OF FINAL GRADING. SEEDING REQUIREMENTS ARE PROVIDED AT THE END OF THIS SPECIFICATION.

1.5 JUTE MESH: STRAW AND HAY MULCH; USED TO COVER DENUDED AREAS UNTIL PERMANENT SEED OR EROSION CONTROL MEASURES ARE IN PLACE. MULCH CAN BE USED ON SLOPES LESS THAN 3:1. USE JUTE MESH ON SLOPES IN EXCESS OF 3:1.

### 1.6 INLET PROTECTION: STRAW BALE DROP INLET STRUCTURE

1.6.1 BALES SHALL BE EITHER WIRE-BOUND OR STRING TIED WITH THE BINDINGS ORIENTATED AROUND THE SIDES RATHER THAN OVER AND UNDER THE BALES.

1.6.2 BALES SHALL BE PLACED LENGTHWISE IN A SINGLE ROW SURROUNDING THE INLET, WITH THE ENDS OF ADJACENT BALES PRESSED TOGETHER.

1.6.3 THE FILTER BARRIER SHALL BE ENTRENCHED AND BACKFILLED. A TRENCH SHALL BE EXCAVATED AROUND THE INLET THE WIDTH OF A BALE TO A MINIMUM DEPTH OF 4 INCHES. AFTER THE BALES ARE STAKED, THE EXCAVATED SOIL SHALL BE BACKFILLED AND COMPACTED AGAINST THE FILTER BARRIER.

1.6.4 EACH BALE SHALL BE SECURELY ANCHORED AND HELD IN PLACE BY AT LEAST TWO STAKES OR REBARS DRIVEN THROUGH THE BALE.

1.6.5 LOOSE STRAW SHALL BE WEDGED BETWEEN BALES TO PREVENT WATER FROM ENTERING BETWEEN BALES.

### 1.7 MAINTENANCE

1.7.1 THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

### 2. TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES

PROVIDE THE FOLLOWING TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION OF THE DEVELOPMENT:

2.1 SILTATION FENCE ALONG THE DOWNGRAIENT SIDE OF THE PARKING AREAS AND OF ALL FILL SECTIONS. THE SILTATION FENCE WILL REMAIN IN PLACE UNTIL THE SITE IS REVEGETATED.

2.2 HAY BALES AT KEY LOCATIONS TO SUPPLEMENT THE SILT FENCE.

2.3 PROTECT TEMPORARY STOCKPILES OF STUMPS, GRUBBINGS, OR COMMON EXCAVATION AS FOLLOWS:

- A. SOIL STOCKPILE SIDE SLOPES SHALL NOT EXCEED 2:1.
- B. AVOID PLACING TEMPORARY STOCKPILES IN AREAS WITH SLOPES OVER 10 PERCENT, OR NEAR DRAINAGE SWALES.
- C. STABILIZE STOCKPILES WITHIN 15 DAYS BY TEMPORARILY SEEDING WITH A HYDROSEED METHOD CONTAINING AN EMULSIFIED MULCH TACKIFIER OR BY COVERING THE STOCKPILE WITH MULCH.
- D. SURROUND STOCKPILE SOIL WITH SILTATION FENCE.

EX:\LAND PROJECT\10000\29522-HRC-VILLAGE AT LITTLE FALLS\MPA\29522-EROSION-NOTES.DWG

EROSION NOTES #1			
HRC - VILLAGE AT LITTLE FALLS WINHAM, MAINE			
DATE: MARCH 23, 2007	SHEET: 21 OF 35	SURVEYING ENGINEERING LAND PLANNING INCORPORATED 153 US ROUTE 1, SCARBOROUGH, MAINE 04074 tel 207.883.1000 fax 207.883.1501 e-mail info@northeastcivilsolutions.com www.northeastcivilsolutions.com	

# EROSION AND SEDIMENTATION CONTROL PLAN

2.4 ALL DENUDED AREAS WHICH HAVE BEEN ROUGH GRADED AND ARE NOT LOCATED WITHIN THE BUILDING PAD, OR PARKING AND DRIVEWAY SUBBASE AREA SHALL RECEIVE MULCH WITHIN 30 DAYS OF INITIAL DISTURBANCE OF SOIL OR WITHIN 15 DAYS AFTER COMPLETING THE ROUGH GRADING OPERATIONS. IN THE EVENT THE CONTRACTOR COMPLETES FINAL GRADING AND INSTALLATION OF LOAM AND SOD WITHIN THE TIME PERIODS PRESENTED ABOVE, INSTALLATION OF MULCH AND NETTING, WHERE APPLICABLE IS NOT REQUIRED.

2.5 IF WORK IS CONDUCTED BETWEEN OCTOBER 15 AND APRIL 15, ALL DENUDED AREAS ARE TO BE COVERED WITH HAY MULCH, APPLIED AT TWICE THE NORMAL APPLICATION RATE, AND ANCHORED WITH FABRIC NETTING. THE PERIOD BETWEEN FINAL GRADING AND MULCHING SHALL BE REDUCED TO A 15 DAY MAXIMUM.

2.6 TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE HAS BEEN STABILIZED OR IN AREAS WHERE PERMANENT EROSION CONTROL MEASURES HAVE BEEN INSTALLED.

## 3. PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT CONTROL MEASURES ARE REQUIRED BY THIS EROSION/SEDIMENTATION CONTROL PLAN:

3.1 STORMWATER RUNOFF GENERATED BY THE DEVELOPMENT OF THIS SITE WILL BE COLLECTED IN A CLOSED DRAINAGE SYSTEM AND DETAINED IN AN UNDERGROUND DETENTION SYSTEM.

3.2 ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIPRAP, ETC.), WILL BE LOAMED, LIMED, FERTILIZED AND SODDED. NATIVE TOPSOIL SHALL BE STOCKPILED AND REUSED FOR FINAL RESTORATION WHEN IT IS OF SUFFICIENT QUALITY.

3.3 SLOPES GREATER THAN 2:1 WILL BE TREATED WITH RIPRAP.

## CONSTRUCTION PHASE

THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION DURING CONSTRUCTION OF THIS PROJECT.

1. ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION WILL BE CLEARED AND LEFT IN AN UNTREATED OR UNVEGETATED CONDITION. IF FINAL GRADING, LOAMING AND SEEDING WILL NOT OCCUR WITHIN 15 DAYS. SEE ITEM NO. 4.

2. PRIOR TO THE START OF CONSTRUCTION IN A SPECIFIC AREA, SILT FENCING AND/OR HAY BALES WILL BE INSTALLED AT THE TOE OF SLOPE AND IN AREAS AS LOCATED ON THE PLANS TO PROTECT AGAINST ANY CONSTRUCTION RELATED EROSION. IMMEDIATELY FOLLOWING CONSTRUCTION OF CULVERTS AND SWALES, RIP RAP APRONS SHALL BE INSTALLED, AS SHOWN ON THE PLANS.

3. TOPSOIL WILL BE STOCKPILED WHEN NECESSARY IN AREAS WHICH HAVE MINIMUM POTENTIAL FOR EROSION AND WILL BE KEPT AS FAR AS POSSIBLE FROM THE EXISTING DRAINAGE COURSE. ALL STOCKPILES EXPECTED TO REMAIN LONGER THAN 15 DAYS SHALL BE:

- A. TREATED WITH ANCHORED MULCH (WITHIN 5 DAYS OF THE LAST DEPOSIT OF STOCKPILED SOIL).
- B. SEEDDED WITH CONSERVATION MIX AND MULCHED IMMEDIATELY.

STOCKPILES EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE ENCIRCLED WITH HAY BALES OR SILT FENCE AT THE TOE OF THE PILE.

4. ALL DISTURBED AREAS EXPECTED TO REMAIN LONGER THAN 7 DAYS SHALL BE EITHER:

- A. TREATED WITH ANCHORED MULCH IMMEDIATELY, OR
- B. SEEDDED WITH CONSERVATION MIX OF ANNUAL RYE GRASS (0.9 LBS/1000 SQ. FT) AND MULCHED IMMEDIATELY.

5. ALL GRADING WILL BE HELD TO A MAXIMUM 2:1 SLOPE WHERE PRACTICAL. ALL SLOPES WILL BE STABILIZED WITH PERMANENT SEEDING, OR WITH STONE, WITHIN 5 DAYS AFTER FINAL GRADING IS COMPLETE. (SEE POST-CONSTRUCTION REVEGETATION FOR SEEDING SPECIFICATION.)

6. ALL CULVERTS WILL BE PROTECTED WITH STONE RIPRAP AND HEADWALLS (D50 = 6" UNLESS OTHERWISE SPECIFIED) AT INLETS AND OUTLETS.

7. CONSTRUCTION TRAFFIC WILL BE DIRECTED OVER THE PROPOSED ROADWAY SYSTEM. ANY AREAS SUBJECT TO RUTTING WILL BE STABILIZED IMMEDIATELY. THE ENTRANCE TO THOMAS DRIVE WILL BE SWEEPED WEEKLY, SHOULD MUD BE TRACKED ONTO IT.

## POST-CONSTRUCTION REVEGETATION

THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING.

1. A MINIMUM OF 4" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE, OR STONE WILL BE PLACED ON SLOPES TO STABILIZE SURFACES.

EX/LAND PROJECT/20000/20622-HRC-VILLAGE AT LITTLE FALLS/WP/20622-EROSION-NOTES.DWG

Drawing Title <b>EROSION NOTES #2</b>	
Project Name and Location <b>HRC -- VILLAGE AT LITTLE FALLS</b>	
SHEET NUMBER <b>22 of 35</b>	
Date <b>MARCH 20, 2007</b>	Scale <b>AS SHOWN</b>



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REG. NO. 04074

# EROSION AND SEDIMENTATION CONTROL PLAN

2. IF FINAL GRADING IS REACHED DURING THE NORMAL GROWING SEASON (4/15 TO 9/15), PERMANENT SEEDING WILL BE DONE AS SPECIFIED BELOW. PRIOR TO SEEDING, LIMESTONE SHALL BE APPLIED AT A RATE OF 136 LBS/1000 SQ. FT. AND 10:20:20 FERTILIZER AT A RATE OF 18.4 LBS/1000 SQ.FT WILL BE APPLIED. BROADCAST SEEDING AT THE FOLLOWING RATES:

LAWNS	SWALES
KENTUCKY BLUEGRASS 0.46 LBS/1000 SF.	CREeping RED FESCUE 0.46 LBS/1000 SF
CREeping RED FESCUE 0.46 LBS/1000 SF.	RED TOP 0.05 LBS/1000 SF.
PERENNIAL RYEGRASS 0.11 LB/1000 SF.	TALL FESCUE 0.46 LBS/1000 SF.

3. AN AREA SHALL BE MULCHED IMMEDIATELY AFTER IS HAS BEEN SEEDED. MULCHING SHALL CONSIST OF HAY MULCH, HYDRO-MULCH OR ANY SUITABLE SUBSTITUTE DEEMED ACCEPTABLE BY THE DESIGNER.

A. HAY MULCH SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE. HAY MULCH SHALL BE SECURED BY EITHER:

I. BEING DRIVEN OVER BY TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.

II. BLANKETED BY TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING, OR WITH SPRAY, ON GRADES GREATER THAN 5%.

B. HYDRO-MULCH SHALL CONSIST OF A MIXTURE OF EITHER ASPHALT, WOOD FIBER OR PAPER FIBER AND WATER SPRAYED OVER A SEEDED AREA. HYDRO-MULCH SHALL NOT BE USED BETWEEN 9/15 AND 4/15.

4. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN SEPTEMBER 15 AND APRIL 15. SHOULD SEEDING BE NECESSARY BETWEEN SEPTEMBER 15, AND APRIL 15, THE FOLLOWING PROCEDURE SHALL BE FOLLOWED.

- A. ONLY UNFROZEN LOAM SHALL BE USED.
- B. LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.
- C. WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS/1000 SQ.FT) SHALL BE ADDED TO THE PREVIOUSLY NOTED AREAS.
- D. WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.6 LBS/1000 SQ. FT.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
- E. FERTILIZING, SEEDING AND MULCHING SHALL BE DONE ON LOAM THE DAY THE LOAM IS TRACKING BY MACHINERY ALONE WILL NOT SUFFICE.
- F. HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE.

5. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 80% COVER HAS BEEN ESTABLISHED. RESEEDING WILL BE CARRIED OUT BY THE CONTRACTOR WITHIN 10 DAYS OF NOTIFICATION BY THE ENGINEER THAT THE EXISTING CATCH IS INADEQUATE.

## MONITORING SCHEDULE

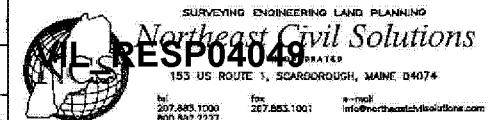
THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO.

MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

- 1. HAY BALE BARRIERS AND SILT FENCE SHALL BE INSPECTED AND REPAIRED ONCE A WEEK OR IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREAS UNDERGOING FINAL GRADING. SHOULD THE HAY BALE BARRIERS PROVE TO BE INEFFECTIVE, THE CONTRACTOR SHALL INSTALL SILT FENCE BEHIND THE HAY BALES.
- 2. VISUALLY INSPECT RIPRAP ONCE A WEEK OR AFTER EACH SIGNIFICANT RAINFALL AND REPAIR AS NEEDED. REMOVE SEDIMENT TRAPPED BEHIND THESE DEVICES ONCE IT ATTAINS A DEPTH EQUAL TO 1/2 THE HEIGHT OF THE DAM OR RISER. DISTRIBUTE REMOVED SEDIMENT OFF-SITE OR TO AN AREA UNDERGOING FINAL GRADING.
- 3. REVEGETATION OF DISTURBED AREAS WITHIN 25' OF DRAINAGE-COURSE/STREAM WILL BE SEEDED WITH THE "MEADOW AREA MIX" AND INSPECTED ON A WEEKLY BASIS OR AFTER EACH SIGNIFICANT RAINFALL AND RESEEDED AS NEEDED. EXPOSED AREAS WILL BE RESEEDED AS NEEDED UNTIL THE AREA HAS OBTAINED 100% GROWTH RATE. PROVIDE PERMANENT RIPRAP FOR SLOPES IN EXCESS OF 3:1 AND WITHIN 25' OF DRAINAGE COARSE.

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<b>EROSION NOTES #3</b>	
Project Name and Location <b>HRC - VILLAGE AT LITTLE FALLS</b>	
SHEET: 23 OF 35	
DATE: MARCH 25, 2007	





## EROSION MULCH REMOVAL

AN AREA IS CONSIDERED STABLE IF IT IS PAVED, GRAVEL, OR IF 80% GROWTH OF PLANTED SEEDS IS ESTABLISHED. ONCE AN AREA IS CONSIDERED STABLE, THE EROSION CONTROL MEASURES CAN BE REMOVED AS FOLLOWS:

1. HAY BALES AND SILT FENCE  
THE HAY BALES AND SILT FENCE SHALL BE DISPOSED OF LEGALLY AND PROPERLY OFF-SITE. ALL SEDIMENT TRAPPED BEHIND THESE CONTROLS SHALL BE:
  - A. DISTRIBUTED TO AN AREA UNDERGOING FINAL GRADING
  - B. GRADED IN AN AESTHETIC MANNER TO CONFORM TO THE TOPOGRAPHY, FERTILIZED, SEEDED AND MULCHED IN ACCORDANCE WITH THE RATES PREVIOUSLY STATED.
2. MISCELLANEOUS  
ONCE ALL THE TRAPPED SEDIMENTS HAVE BEEN REMOVED FROM THE TEMPORARY SEDIMENTATION DEVICES, THE DISTURBED AREAS MUST BE REGRADED IN AN AESTHETIC MANNER TO CONFORM TO THE SURROUNDING TOPOGRAPHY. ONCE GRADED, THESE DISTURBED AREAS MUST BE LOAMED (IF NECESSARY) FERTILIZED, SEEDED AND MULCHED IN ACCORDANCE WITH THE RATES PREVIOUSLY STATED.

## 4 WINTER CONSTRUCTION

WINTER CONSTRUCTION: CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 1 AND APRIL 15 OF ANY YEAR SHALL BE CONSIDERED "WINTER CONSTRUCTION," AND SHALL CONFORM TO THE FOLLOWING CRITERIA.

MAXIMUM AREAS WITHOUT STABILIZATION: WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. EXPOSED AREAS SHALL BE LIMITED TO THE AREA THAT CAN BE MULCHED IN ONE DAY, PRIOR TO ANY SNOW EVENT. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED SUCH THAT NOT MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION OR WITHOUT EROSION CONTROL PROTECTION AT ANY ONE TIME.

STABILIZATION: AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 100 LB PER 1,000 SF. (WITH OR WITHOUT SEEDING), OR DORMANT SEEDED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SUCH THAT THE SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.

LOAM OR SEED WILL NOT BE REQUIRED BETWEEN THE DATES OF OCTOBER 15, AND APRIL 15. DURING PERIODS WHEN TEMPERATURES ARE ABOVE FREEZING, EXPOSED SLOPES SHALL BE FINE-GRADED AND PROTECTED WITH MULCH, OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. AFTER NOVEMBER 1, ANY LOAMED, SMOOTH, FINAL GRADED AREAS MAY BE DORMANT SEEDED AT A RATE OF 200% TO 300% HIGHER THAN SPECIFIED FOR PERMANENT SEED, AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING TEMPERATURES, ALL EXPOSED AREAS SHALL BE CONTINUOUSLY GRADED BEFORE FREEZING, AND THE SURFACE SHALL BE PROTECTED TEMPORARILY FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT EXPOSED DURING THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW DITCHES TO BE FINISHED WITH PERMANENT SURFACE TREATMENT, EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF HAY BALES OR STONE CHECK DAMS, IN ACCORDANCE WITH THE STANDARD DETAILS.

## EROSION AND SEDIMENTATION CONTROL PLAN

MULCH ANCHORING: MULCH ANCHORING SHALL BE INSTALLED ACCORDING TO THE FOLLOWING CRITERIA:

- A. BETWEEN NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY PEG LINE, MULCH NETTING, ASPHALT EMULSION CHEMICAL, OR TRACK OR WOOD CELLULOSE FIBER.
- B. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS, AND FOR ALL OTHER SLOPES GREATER THAN 5%.
- C. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 5%.

DAILY PROTECTION: DURING THE PERIOD OF OCTOBER 1 TO APRIL 15, ALL BARE AND EXPOSED EARTH SHALL BE TREATED WITH A DORMANT SEEDING, MULCHED AND ANCHORED AT THE END OF EACH WORKING DAY.

SNOW REMOVAL: SNOW SHALL BE REMOVED PRIOR TO THE APPLICATION OF SEED AND MULCH.

LIMIT OF CONSTRUCTION: THE LIMIT OF CONSTRUCTION FOR THE SITE SHALL BE AS INDICATED ON THE PLANS. NO DISTURBANCE OF SOILS, VEGETATION, OR WETLANDS WILL BE PERMITTED BEYOND THE LIMIT OF DISTURBANCE, EXCEPT IN THE AREAS OF STORMWATER DITCHES, CULVERTS, AND DISCHARGE APRONS.

CONSTRUCTION STAGING AREAS: THE CONSTRUCTION AND STAGING AREAS FOR THE SITE SHALL BE LOCATED IN WITHIN THE LIMIT OF DISTURBANCE. SILT FENCING SHALL BE PLACED ALL AROUND THE PERIMETER OF THE STAGING/STORAGE AREAS.

SCHEDULE: CONSTRUCTION WILL BEGIN WITH THE INSTALLATION OF EROSION CONTROL SYSTEMS TO PROTECT DRAINAGE WAYS AND AREAS OUTSIDE THE CONSTRUCTION LIMITS. SILT FENCING AND DITCH PROTECTION MEASURES SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE IN THE CONTRIBUTING DRAINAGE AREA. AS SOON AS CONTROL MEASURES ARE IN PLACE, AND PRIOR TO COMMENCING SOIL DISTURBANCE ACTIVITIES, THE CONSTRUCTION ROAD SHALL BE INSTALLED. IT IS IMPERATIVE THAT DISTURBANCES TO VEGETATION BE LIMITED ONLY TO THOSE AREAS, WHICH ARE NECESSARY TO ACCOMPLISH THE WORK.

THE FINE AND VERY FINE SANDY LOAMS THAT WILL BE EXPOSED DURING SITE PREPARATION MAY BE SUSCEPTIBLE TO EROSION, AND CAN UNDERGO STRENGTH LOSS WHEN SUBJECTED TO CONSTRUCTION TRAFFIC AND EXCAVATION ACTIVITIES, PARTICULARLY DURING PERIODS OF PRECIPITATION AND HIGH GROUND WATER LEVELS. THEREFORE, CARE WILL BE EXERCISED DURING CONSTRUCTION TO MINIMIZE DISTURBANCE OF THE BEARING SOILS. ALL TOPSOIL, ORGANIC AND LOOSE SURFACE SOIL WILL BE STRIPPED AND STORED FOR REUSE LATER. SHOULD THE SUBGRADE BECOME SOFT OR DIFFICULT TO WORK AND/OR WHEREVER SUBSURFACE DRAINAGE CAVITIES ARE ENCOUNTERED, THE SUBGRADE WILL BE OVER EXCAVATED AS REQUIRED, AND BACKFILLED WITH GRANULAR FILL OR CRUSHED STONE.

ERLAND PROJECT/2000/2002-HRC-VILLAGE AT LITTLE FALLS, NH/04/2002-EROSION-NOTES.DWG

PROJECT TITLE <b>EROSION NOTES #4</b>	
PROJECT SITE LOCATION <b>HRC - VILLAGE AT LITTLE FALLS</b>	
SHEET NUMBER <b>24 of 35</b>	
DATE: MARCH 20, 2007	SHEET: 24 of 35

SURVEYING ENGINEERING LAND PLANNING <b>NorthEast Civil Solutions</b>	
PROJECT NUMBER <b>RESP04050</b>	
153 US ROUTE 1, SCARBOROUGH, MAINE 04074	
tel 207.563.1000 800.862.2227	fax 207.563.1001 e-mail info@northeastcivilsolutions.com



# EROSION AND SEDIMENTATION CONTROL PLAN

## HOUSEKEEPING

### 1. SPILL PREVENTION:

CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.

### 2. GROUNDWATER PROTECTION:

DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND OTHER RELEVANT FACTORS ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL. DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.

### 3. FUGITIVE SEDIMENT AND DUST:

ACTIONS MUST BE TAKEN TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL.

### 4. DEBRIS AND OTHER MATERIALS:

LITTER, CONSTRUCTION DEBRIS, AND CHEMICALS EXPOSED TO STORMWATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.

### 5. TRENCH OR FOUNDATION DE-WATERING:

TRENCH DE-WATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER MUST BE REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, AND MUST BE SPREAD THROUGH NATURAL WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE, LIKE COFFERDAM SEDIMENTATION BASIN. AVOID ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED BY THE DEPARTMENT.

### 6. NON-STORMWATER DISCHARGES:

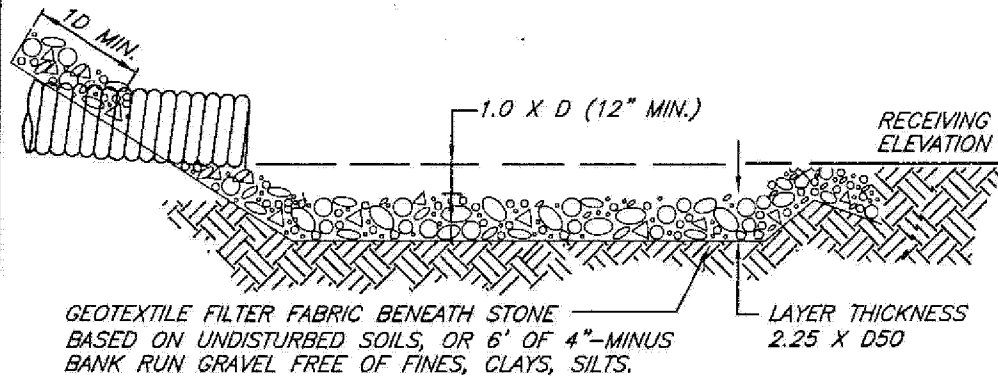
IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES.

### 7. ADDITIONAL REQUIREMENTS:

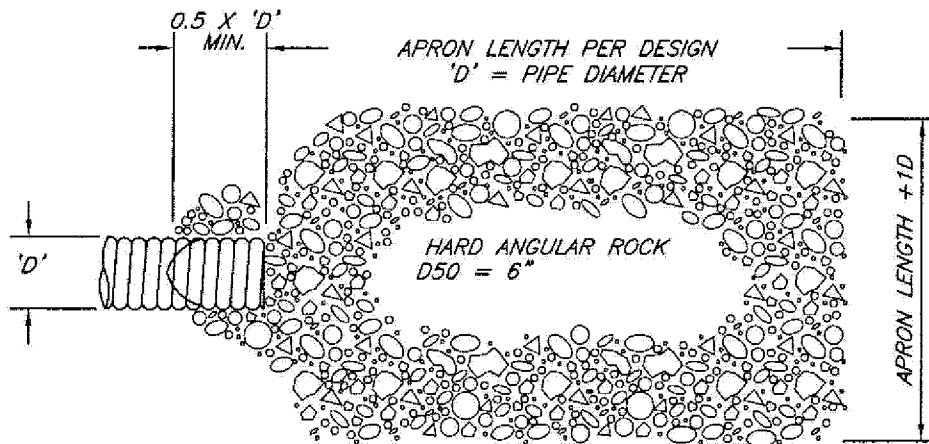
ADDITIONAL REQUIREMENTS MAY BE APPLIED ON A SITE-SPECIFIC BASIS.

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Drawing Title: <b>EROSION NOTES #5</b>		 <b>RESP04051</b> SURVEYING ENGINEERING LAND PLANNING CORPORATED 153 US ROUTE 1, SCARBOROUGH, MAINE 04074 tel: 207.883.1000 fax: 207.883.1001 e-mail: info@northeastcivilsolutions.com	
Project Name and Location: <b>HRC - VILLAGE AT LITTLE FALLS</b>			
Worksheet Name: <b>DATE: MARCH 20, 2007</b>			
SHEET: <b>25</b> OF <b>35</b>			



### SECTION



### PLAN

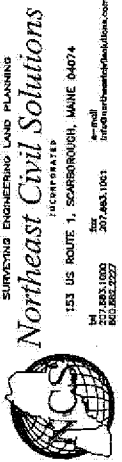
#### NOTES:

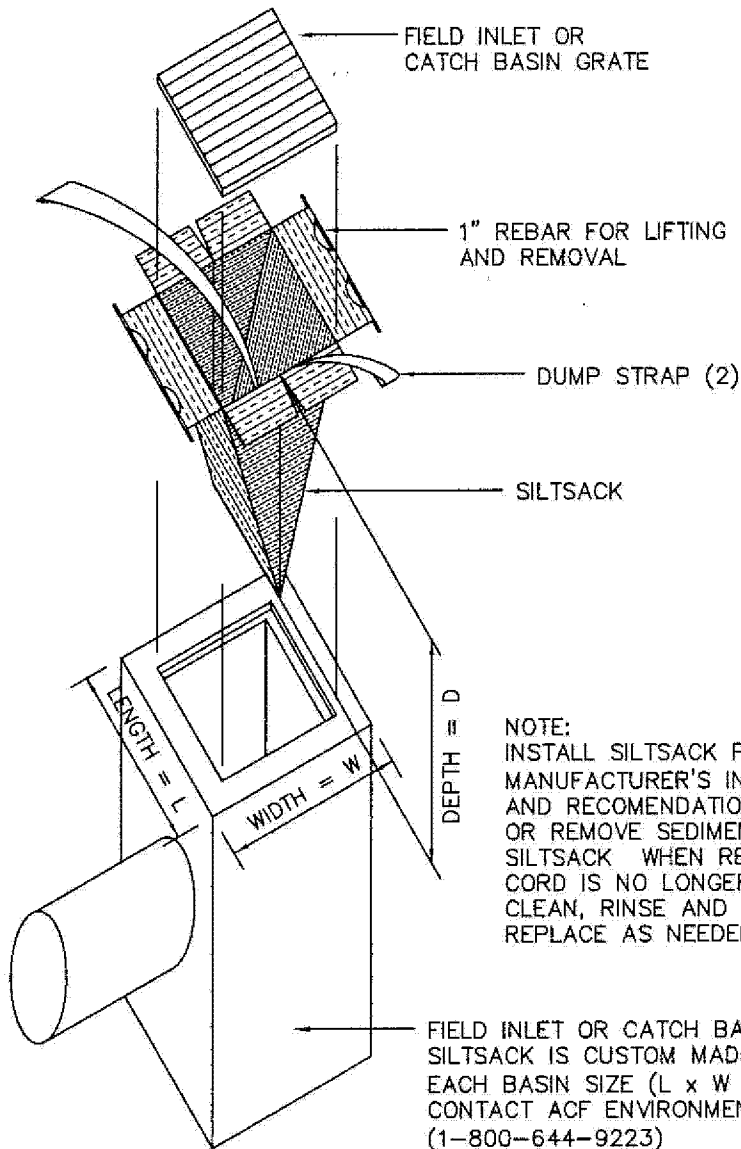
1. CONSULT WITH IF&W IF FISH PASSAGE WILL BE INHIBITED DURING LOW FLOWS.
2. REFER TO DESIGN NOTES AND LIMITATIONS IN TEXT ON PIPE OUTLET PROTECTION.
3. IN DEFINED CHANNELS, APRON SHALL EXTEND FULL WIDTH OF BOTTOM AND ONE FOOT ABOVE MAX. TAILWATER OR UP TO BANK FULL, WHICHEVER IS LESS.
4. CONSTRUCT IN ACCORDANCE WITH PROJECT SPECIFICATION  
(02373 - GEOTEXTILE)  
(02380 - STONE FILL RIP RAP, STONE BLANKET AND STONE DITCH PROTECTION)  
(02370 - SOIL SURFACE EROSION CONTROL)

FILE: OUTLETAPRON

PIPE OUTLET  
PROTECTION

ENVIRONMENTAL PROJECTS/2000/0252-HRC-VILLAGE AT LITTLE FALLS/VIRPA/2602-EROSION DETAILS.DWG





NOTE:  
INSTALL SILTSACK PER  
MANUFACTURER'S INSTRUCTIONS  
AND RECOMENDATIONS. EMPTY  
OR REMOVE SEDIMENT FROM  
SILTSACK WHEN RESTRAINT  
CORD IS NO LONGER VISIBLE.  
CLEAN, RINSE AND  
REPLACE AS NEEDED.

FIELD INLET OR CATCH BASIN  
SILTSACK IS CUSTOM MADE FOR  
EACH BASIN SIZE (L x W x D).  
CONTACT ACF ENVIRONMENTAL  
(1-800-644-9223)

## SILTSACK INLET SEDIMENT CONTROL DEVICE

© ME DEP 2003

FILE: SILTSACK

EROSION PROJECTS/2000/2003-HRC-VILLAGE AT LITTLE FALLS/MPA/2002-EROSION DETAILS.DWG

### EROSION DETAILS

HRC - VILLAGE AT LITTLE FALLS

WETLAND MAP

DATE: MARCH 28, 2007

SHEET: 27 OF 35



**Northeast Civil Solutions**  
INCORPORATED

153 US ROUTE 1, SCARBOROUGH, MAINE 04074

TEL: 207.663.1000

FAX: 207.663.1001

WWW.NECSOLUTIONS.COM

VIL\_RESP04053

1. PLACE 4" TOPSOIL.
2. ADJACENT STRIPS ARE INSTALLED SNUGLY WITH 4" OVERLAP AND STAKED AT 3'-5' INTERVALS. INSTALL ENKAMAT PEAKED SIDE DOWN.
3. STAKE ENKAMAT INTO 12" DEEP TRENCHES AROUND THE ENTIRE PERIMETER AND COVER WITH SOIL.
4. SPREAD THIN LAYER OF LOAM TO FILL ENKAMAT SPACES.
5. DISTRIBUTE SEED.
6. INSTALL EROSION CONTROL BLANKET PER MANUFACTURER RECOMMENDATIONS.

NOTES

1. PLACE 4" TOPSOIL.
2. ADJACENT STRIPS ARE INSTALLED SNUGLY WITH 4" OVERLAP AND STAKED AT 3'-5' INTERVALS. INSTALL ENKAMAT PEAKED SIDE DOWN.
3. STAKE ENKAMAT INTO 12" DEEP TRENCHES AROUND THE ENTIRE PERIMETER AND COVER WITH SOIL.
4. SPREAD THIN LAYER OF LOAM TO FILL ENKAMAT SPACES.
5. DISTRIBUTE SEED.
6. INSTALL EROSION CONTROL BLANKET PER MANUFACTURER RECOMMENDATIONS.

UPSLOPE TRENCH  
12" DITCH BACK-FILLED  
TO BURY UPPER EDGE  
OF ENKAMAT

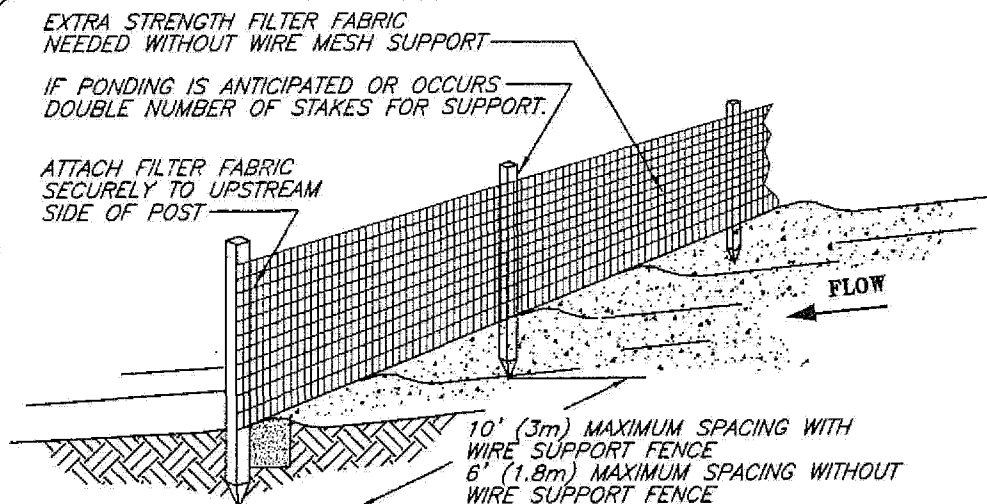
DIRECTION OF WATER FLOW

OVERLAP  
4" OVERLAP STAKED AT  
3'-5' INTERVALS.

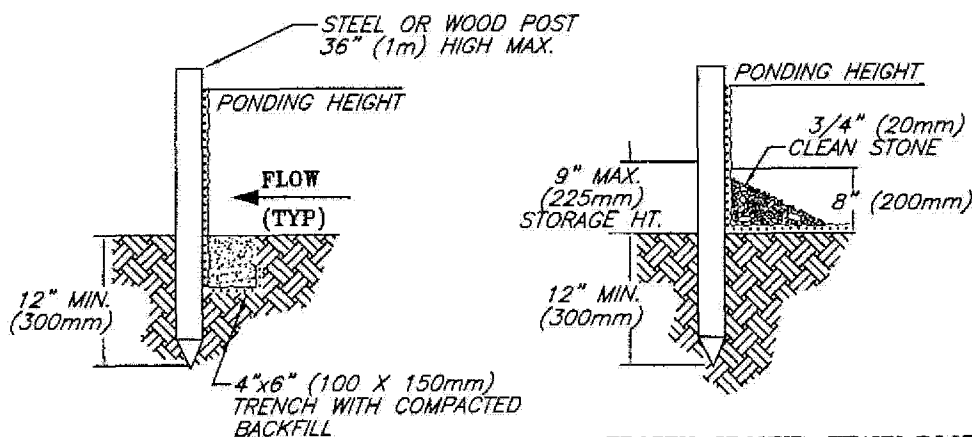
## FIBROUS MATTING SLOPE INSTALLATION

NOT TO SCALE

NOTE: INSTALL EROSION MATTING ON SLOPES GREATER THAN 3:1 OR AS SHOWN ON PLAN.



NOTE: PRE-FABRICATED SILT FENCE IS ACCEPTABLE IF INSTALLED PER MANUFACTURER.



### TRENCH DETAIL

## LEDGE, FROZEN GROUND, HEAVY ROOTS INSTALLATION WITHOUT TRENCHING

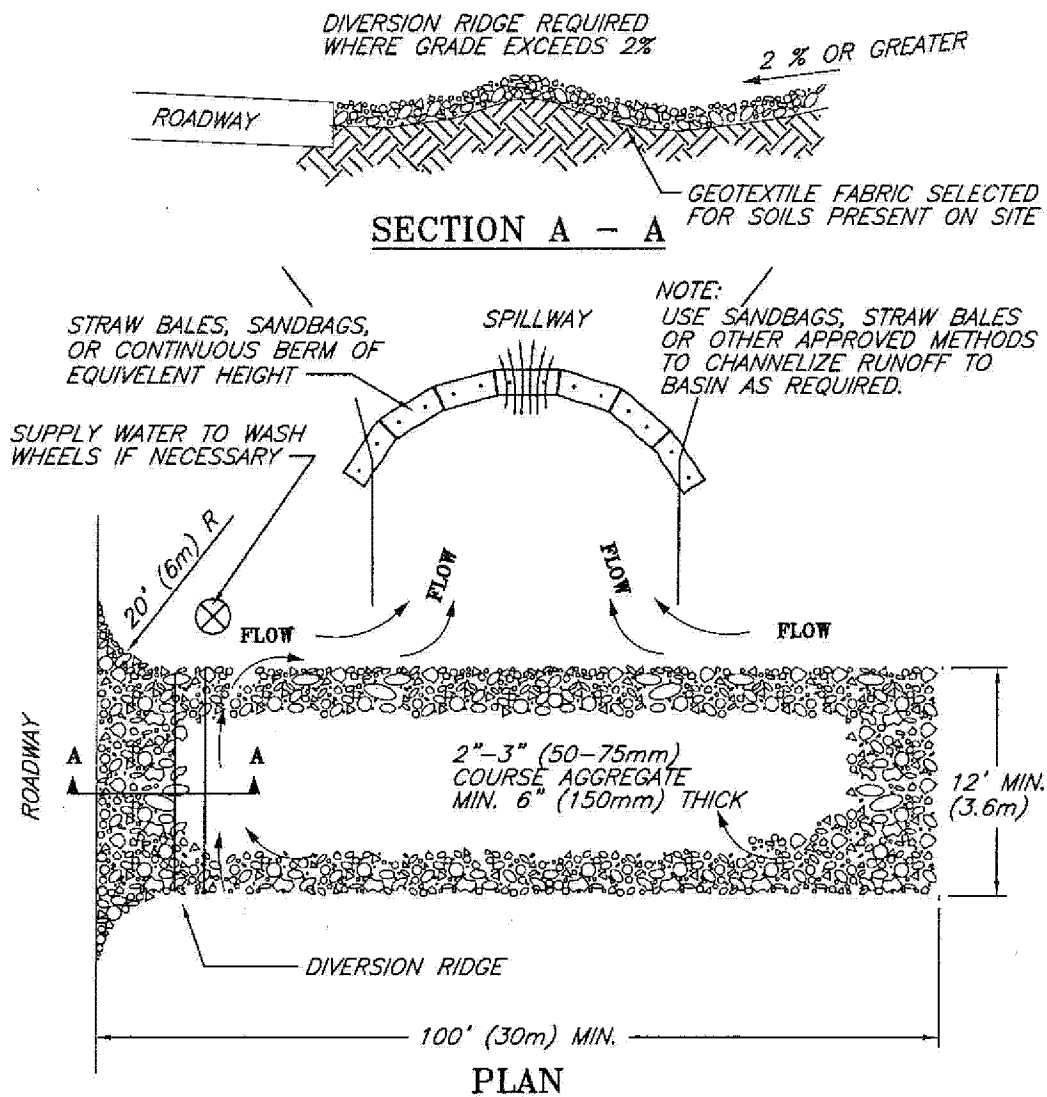
NOTES:

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" (225mm) MAXIMUM RECOMMENDED STORAGE HEIGHT.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
4. DO NOT PLACE SILT FENCE IN STREAMS OR CONCENTRATED FLOW CONDITIONS.
5. CONSTRUCT IN ACCORDANCE WITH PROJECT SPECIFICATION (02370 - SOIL SURFACE EROSION CONTROL)

FILE: SILTFENC

## SILT FENCE



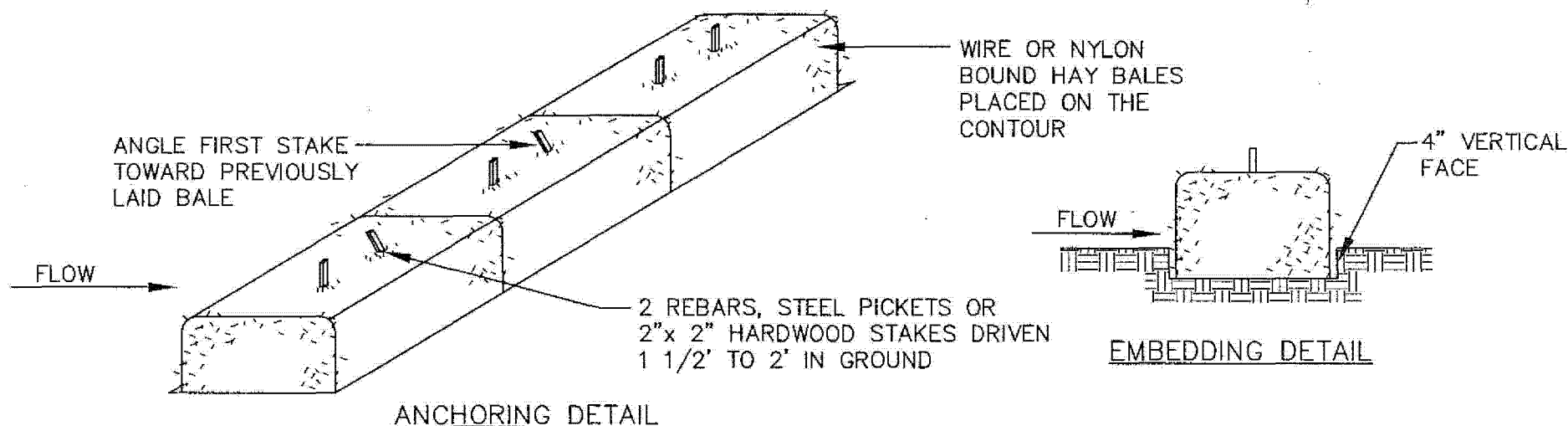


NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. ADDITIONAL SWEEPING OF PUBLIC ROADS MAY ALSO BE REQUIRED.
5. FOR GEOTEXTILE, CONSTRUCT IN ACCORDANCE WITH PROJECT SPECIFICATION  
(02373 - GEOTEXTILE)

FILE: ENTRANCE

TEMPORARY  
GRAVEL  
CONSTRUCTION  
ENTRANCE/EXIT



**NOTES:**

1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR REBARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS DIRECTED BY PROJECT ENGINEER.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
6. CONSTRUCT IN ACCORDANCE WITH PROJECT SPECIFICATION 02370 - SOIL SURFACE EROSION CONTROL.

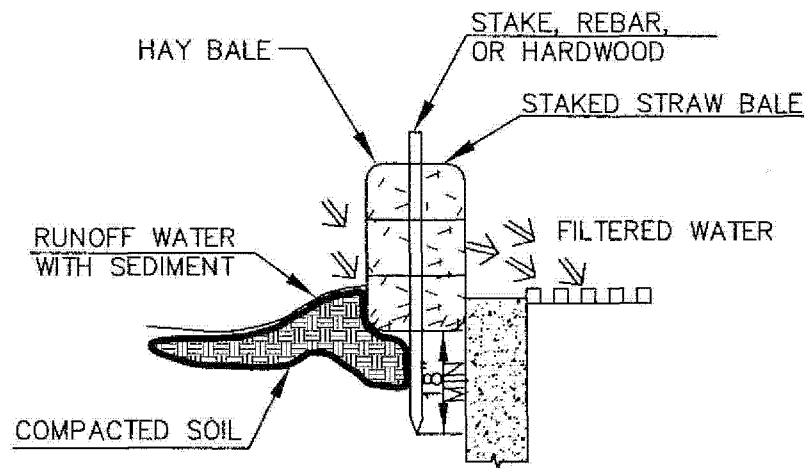
## HAY BALE SEDIMENT BARRIER

NOT TO SCALE

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<b>EROSION DETAILS</b>			SURVEYING ENGINEERING LAND PLANNING	
Project Name and Location			<b>Northeast Civil Solutions</b> 153 US ROUTE 1, SCARBOROUGH, MAINE 04074	
HRC - VILLAGE AT LITTLE FALLS WINNEMAC, MAINE			TEL: 207.883.1000 FAX: 207.883.1001 E-MAIL: info@northeastcivilsolutions.com	
DATE: MARCH 23, 2007	SHEET: 32 OF 35			



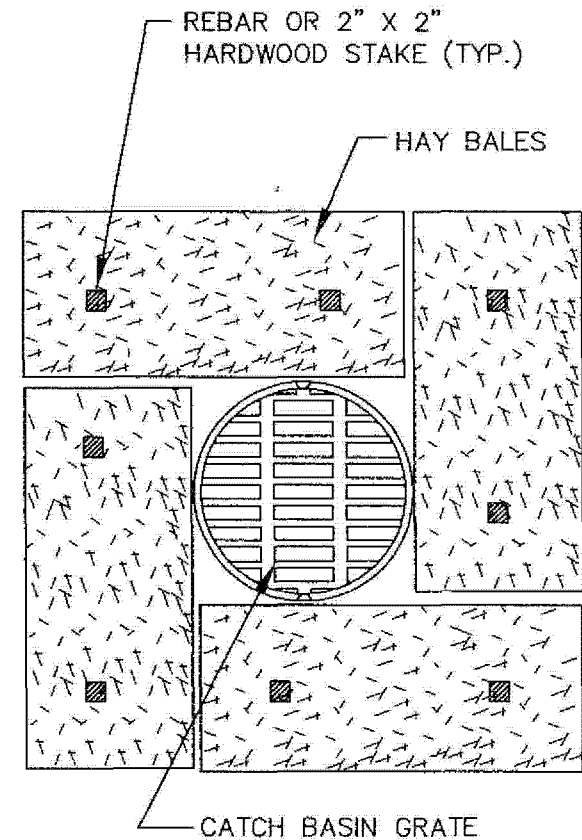


**NOTE:**

CONTRACTOR SHALL UTILIZE THIS METHOD OF SEDIMENT CONTROL, OR AN APPROVED EQUAL AROUND EXISTING AND PROPOSED CATCH BASINS DURING CONSTRUCTION.

**INSTALLATION:**

1. BALES SHALL BE WIRE BOUND OR STRING TIED WITH THE BINDINGS ORIENTED AROUND THE SIDES RATHER THAN OVER AND UNDER THE BALES.
2. BALES SHALL BE PLACED LENGTH WISE IN A SINGLE ROW SURROUNDING THE INLET, WITH THE ENDS OF ADJACENT BALES PRESSED TOGETHER.
3. THE FILTER BARRIER SHALL BE ENTRENCHED AND BACKFILLED. A TRENCH SHALL BE EXCAVATED AROUND THE INLET THE WIDTH OF A BALE TO A MINIMUM DEPTH OF 4 INCHES. AFTER THE BALES ARE STAKED THE EXCAVATION SOIL SHALL BE BACKFILLED AND COMPACTED AGAINST THE FILTER BARRIER.
4. EACH BALE SHALL BE SECURELY ANCHORED AND HELD IN PLACE BY AT LEAST 2 STAKES OR REBARS DRIVEN THROUGH THE BALE.
5. LOOSE STRAW SHALL BE WEDGED BETWEEN BALES TO PREVENT WATER FROM ENTERING BETWEEN BALES.
6. CONSTRUCT IN ACCORDANCE WITH PROJECT SPECIFICATION 02370 – SOIL SURFACE EROSION CONTROL.



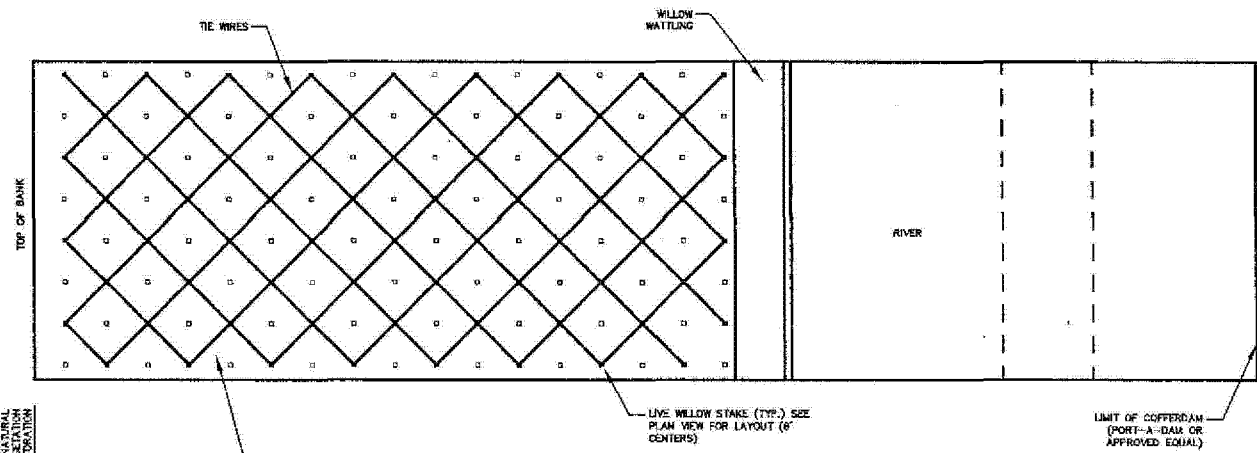
**NOTE:**

INSTALL BARRIER AT EACH CATCH BASIN

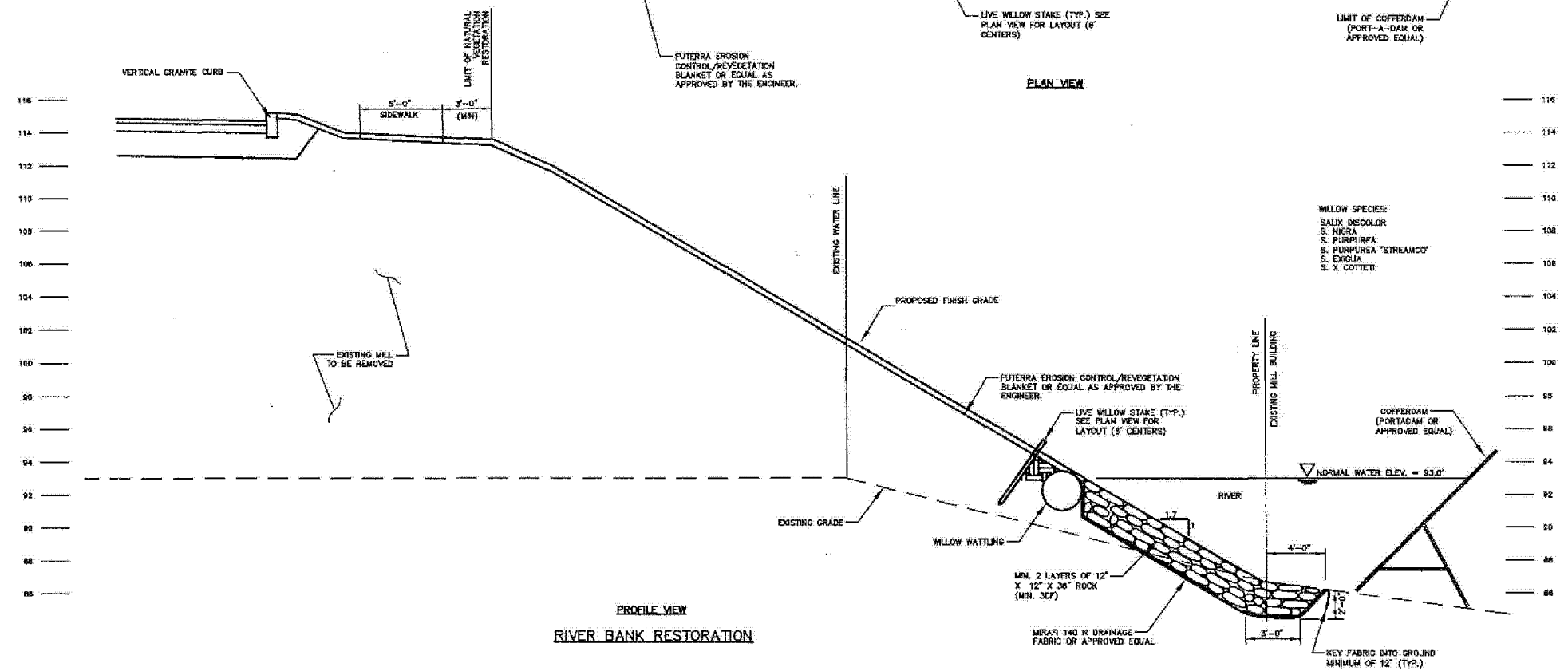
## CATCH BASIN HAY BALE BARRIER

NOT TO SCALE

EROSION DETAILS HRC - VILLAGE AT LITTLE FALLS WENHAM, MAINE DATE: MARCH 20, 2007 SHEET: 33 OF 35		B:\LAND PROJECT\2000\23522-HRC-VILLAGE AT LITTLE FALLS\HRC\23522-01\EROSION DETAIL.DWG SURVEYING ENGINEERING LAND PLANNING <b>Northeast Civil Solutions</b> 153 US ROUTE 1, SCARBOROUGH, MAINE 04074 TEL: 207.883.1200 FAX: 207.883.1001 INFO@NORTHEASTCIVILSOLUTIONS.COM
--	--	--



PLAN VIEW



PROFILE VIEW  
RIVER BANK RESTORATION

- WILLOW SPECIES:  
 S. ALIX DISCOLOR  
 S. NIGRA  
 S. PURPUREA  
 S. PURPUREA 'STREAMCO'  
 S. DOUGLA  
 S. X. COTTET

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**EROSION DETAILS**

Project Name: **HRC - VILLAGE AT LITTLE FALLS**

WINDHAM, MAINE

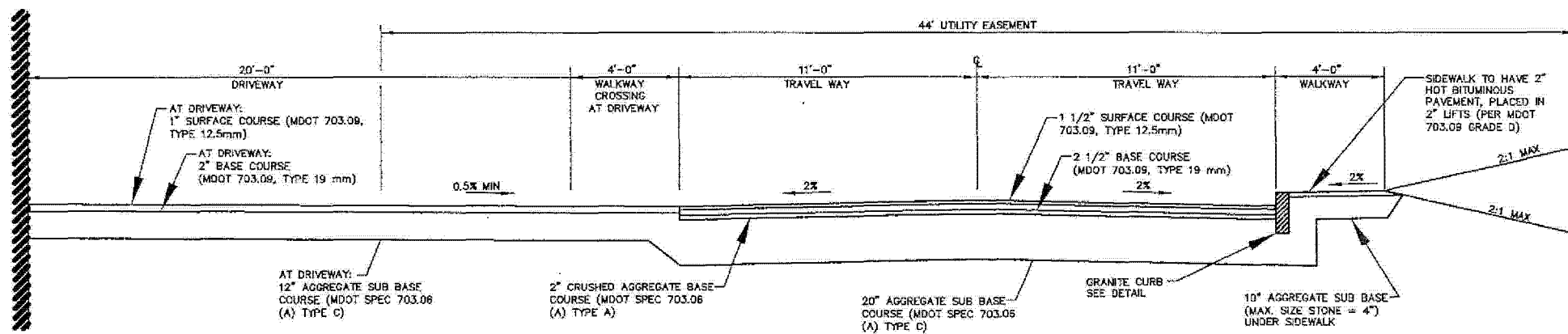
DATE: MARCH 23, 2007

SHEET: 34 of 35

**Northeast Civil Solutions**

153 US ROUTE 1, SCARBOROUGH, MAINE 04074

TEL: 207.953.1000 FAX: 207.953.1001 E-MAIL: info@northeastcivilsolutions.com



## STREET CROSS-SECTION

N.T.S.

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<b>TYP. ROADWAY SECTION</b>	
<b>HVC - VILLAGE AT LITTLE FALLS</b>	
<b>WINDHAM, MAINE</b>	
DATE: MARCH 20, 2007	SHEET: 35 OF 35



**Northeast Civil Solutions**  
 INCORPORATED  
 153 US ROUTE 1, SCARBOROUGH, MAINE 04074  
 Tel: 207.863.1090 Fax: 207.553.1001  
 800.867.2222 info@northeastcivilsolutions.com



## **ATTACHMENT 6**

### **ADDITIONAL PLANS**

Please refer to attachment 5 for details of the wetland impacts, erosion control measures and shoreline restoration.



## **ATTACHMENT 7**

### **CONSTRUCTION PLAN**

Construction will begin after all required permits are obtained. The anticipated starting date for construction is October 2007. Temporary erosion control measures outlined in the Erosion Control Report (Refer to Attachment 8) and the attached planset will be installed prior to construction. Three temporary construction entrances off of Depot Street will be utilized to access the site.

After these erosion control measures are in place, the mill and other outlying buildings will be removed from the site. The mill demolition and associated clean up effort will be performed per the attached "Voluntary Response Action Program" (VRAP) permit.

In conjunction with the removal of the mill building, the river shore will be returned to its natural state. A temporary cofferdam will be installed to allow for clean up of the riverbed and the installation of stabilizing rocks below the water level. Above the water line, the slope will be stabilized with a brush mattress and willow wattling. Please refer to the attached Erosion and Sedimentation Control Detail Sheet as well as the Landscaping Plans for additional information regarding shore restoration.

After the mill is removed and the shoreline is stabilized, a portion of the site will be preloaded to reduce the potential for settlement. After preloading, preliminary site grading will begin. Only those areas under active construction will be cleared and left in an untreated or unvegetative condition. Concurrent with the proposed grading, the contractor will install site utilities including stormwater infrastructure. Outlet protection will be installed at the stormwater discharge point prior to operation.

Please refer to the attached planset for additional information regarding the proposed construction process.



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCIO

GOVERNOR

DAWN R. GALLAGHER

COMMISSIONER

November 9, 2005

Village at Little Falls, LLC  
c/o Renee Lewis  
2 Market Street, 6<sup>th</sup> Floor  
Portland, Maine 04101

Re: Village at Little Falls Property, 7 & 13 Depot Street, South Windham,  
Maine-Voluntary Response Action Program No Action Assurance Letter

Ms. Lewis:

The Maine Department of Environmental Protection ("Department") has received and reviewed your application to the Department's Voluntary Response Action Program ("VRAP"), along with the environmental site assessment reports submitted by your environmental consultant for the project, Ransom Environmental Consultants, Inc. ("Ransom"). The application was submitted to the Department with the request that Village at Little Falls, LLC and Lumis, Inc., as applicants to the VRAP, receive the protections provided by the VRAP Law.

Based on the information presented in the reports, the Department agrees with the conclusions and recommendations for further actions at the property. The remedial actions include provisions for the excavation and disposal of petroleum and polychlorinated biphenyl ("PCB") contaminated soils, as well as the appropriate encapsulation of some of the PCB contaminated soils as described in the "Voluntary Response Action Plan for Village at Little Falls, LLC, South Windham, Maine", authored by Ransom and dated June 8, 2005.

The Department's concurrence with the proposed actions is conditioned on the prohibition of installation of groundwater extraction wells on the property without the permission of the Department.

Provided that the remedial actions are completed to the satisfaction of the Department, Village at Little Falls, LLC, Lumis, Inc., and their successors and/or assigns will be granted the liability protection provided by 38 M.R.S.A. §343-E(1) for the property located at 7 and 13 Depot Street, identified as Lots 6, 7 and 8 on Windham Tax Map 38, and described in Book 1681, Page 99, and Book 18046, Page 32 of the Cumberland

AUGUSTA  
STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0017  
(207) 287-7688  
RAY BLDG., HOSPITAL ST.

BANGOR  
106 HOGAN ROAD  
BANGOR, MAINE 04401  
(207) 941-4570 FAX: (207) 941-4584

PORTLAND  
312 CANCO ROAD  
PORTLAND, MAINE 04103  
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE  
1235 CENTRAL DRIVE, SKYWAY PARK  
PRESQUE ISLE, MAINE 04769-2094  
(207) 764-0477 FAX: 764-0478

web site: [www.maine.gov/dep](http://www.maine.gov/dep)

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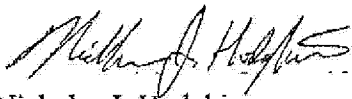


County Registry of Deeds. The Department will take no action against Village at Little Falls, LLC, Lumis, Inc., and those persons identified in 38 M.R.S.A. § 343-E(6).

Once the recommended remedial measures to be implemented at the property are completed, a report demonstrating the successful implementation of the tasks should be forwarded to the VRAP. Upon determining successful conclusion of the remedial tasks, the Department will issue to Village at Little Falls, LLC and Lumis, Inc. a Commissioner's Certificate of Completion.

If you have any questions regarding this letter, please feel free to call me at 207-287-4854.

Sincerely,



Nicholas J. Hodgkins  
Division of Remediation  
Bureau of Remediation & Waste Management

Pc: D. Todd Coffin, Ransom  
Jon Woodard, Maine DEP

VIL\_RESP04067

VOLUNTARY RESPONSE ACTION PLAN  
FOR  
VILLAGE AT LITTLE FALLS, LLC  
SOUTH WINDHAM, MAINE


Prepared for:

Renee Lewis  
2 Market Street, 6<sup>th</sup> Floor  
Portland, Maine 04101

Prepared by:

Ransom Environmental Consultants, Inc.  
200 High Street  
Portland, Maine 04101  
(207) 772-2891

Project No. 046016  
June 8, 2005



D. Todd Coffin  
Maine Certified Geologist No. 310

VIL\_RESP04063

## TABLE OF CONTENTS

	Page
1.0 INTRODUCTION.....	1
2.0 SITE BACKGROUND.....	2
2.1 7 Depot Street.....	2
2.1.1 Site Description .....	2
2.1.2 Prior Subsurface Investigations.....	3
2.2 13 Depot Street.....	8
2.2.1 Site Description .....	8
2.2.2 Prior Subsurface Investigations.....	9
3.0 RESPONSE ACTION PLAN.....	11
3.1 7 Depot Street.....	11
3.1.1 Petroleum-Impacted Soils .....	11
3.1.2 PCB-Impacted Soils .....	11
3.1.3 PCB-Impacted Building Materials.....	15
3.2 13 Depot Street.....	15
3.2.1 Clean-up Goal for Petroleum-Impacted Soils .....	15
3.2.2 Soils Excavation .....	15
3.2.3 Excavated Soil Testing and Disposal.....	16
3.2.4 Post Excavation Testing .....	16
4.0 DOCUMENTATION.....	17

### Figures

- Figure 1 Site Location Map
- Figure 2 PCB Sample Plan (7 Depot Street)
- Figure 3 Exploration Plan (13 Depot Street)
- Figure 4 Proposed Site Development (7 Depot Street)
- Figure 5 Proposed Borings (7 Depot Street)

### Appendix A

#### Data from Jacques Whitford Report

VRAP for Village at Little Falls, LLC  
June 8, 2005

Page i

VIL\_RESP04069

## 1.0 INTRODUCTION

Ransom Environmental Consultants, Inc. (Ransom) has prepared the enclosed Voluntary Response Action Plan (VRAP) for review by the Maine Department of Environmental Protection (MDEP). The owner of the property, Village at Little Falls, LLC (VLF), seeks a "No-Action Assurance" letter from MDEP. Ransom understands that once clean-up measures proposed herein have been completed, MDEP will review clean-up documentation and issue a "Certificate of Completion" provided it concurs that the VRAP has been fully implemented.

The VLF property is comprised of two contiguous parcels of land located at 7 and 13 Depot Street in South Windham, Maine (Figure 1). 7 Depot Street is the former location of the Keddy Steel Mill. 13 Depot Street is the former location of the Energy Depot Company. Site development plans include demolition and removal of the former mill building and construction of residential units across the site.

In late 2004, VLF submitted to MDEP a VRAP application, application fees, and previous site investigation reports. The prior reports included:

1. Environmental Site Assessment, Phase I & II, Former Steel Mill Property, Route 202 and Depot Street, Windham, Maine, by S.W. Cole Engineering, Inc., November 17, 1997.
2. Phase I Limited Environmental Assessment, Lot 7 of Map 38, Windham Township, South Windham, Cumberland County, Maine, by Consa Geotechnical Engineering, March 18, 1993.
3. Report on Supplemental Site Investigation, 7 Depot Street, Windham, Maine by Jacques Whitford Company, Inc., March 9, 2004.
4. Phase I and II, Environmental Site Assessments, Former Depot Energy Company 13 Depot Street, Windham, Maine, by Jacques Whitford Company, Inc., June 14, 2004.

Following review of these reports by MDEP, VLF, Ransom and Nick Hodgkins with MDEP met on August 27, 2004 to discuss clean-up requirements for the site. Key findings from this meeting are detailed below.

### *7 Depot Street*

- MDEP has classified the entire site (7 and 13 Depot Street) as a "stringent" site; however, given specific onsite conditions and contaminant characteristics, clean-up will not be performed to the prescriptive criteria of a stringent clean-up, but will be modified to less-stringent criteria that is appropriate for the site.

- MDEP has requested that oily soils excavated during site development activities be transported off-site for proper disposal or reclamation (e.g., asphalt batching). The "Baseline 2" standard would apply to heavy oils, such as motor oil or heating oils heavier than No. 2. Although not identified at the 7 Depot Street site, any spill of light oils, such as gasoline, would fall under MDEP "Intermediate" clean-up guideline.
- The investigation and remediation of PCBs at the site will require review by MDEP and the US Environmental Protection Agency (EPA) under the Toxic Substances Control Act (TSCA).
- The PCB mitigation will target source areas in site soils. Removal and/or stabilization of PCBs in source areas will be protective of human health and substantially reduce the potential for impacts to the nearby river. VLF will not be responsible for any testing or clean up associated with potential historic impacts to the river. Such impacts, if present, will be addressed by MDEP in the context of its ongoing regional and state water quality assessment programs.

### *13 Depot Street*

- Gasoline-impacted soils will require remediation to the MDEP "Intermediate" guideline (5 mg/kg – lab result). Mr. Hodgkins noted that a reading of 50 ppm using a photoionization detector is often a reasonable target for identifying, in the field, soils that meet (or are close to meeting) the 5 mg/kg criteria. PID readings will guide proposed soil removal activities.
- Soils visibly impacted by motor oil or other petroleum products (such as surface stains under or near auto transmissions and other equipment) would require removal and off-site disposal or reclamation.

## **2.0 SITE BACKGROUND**

### **2.1 7 Depot Street**

#### *2.1.1 Site Description*

The site consists of a former steel mill located on 7 Depot Road in South Windham, Maine (refer to Figure 1). The approximately 6.5 acre parcel is bordered by Depot Street to the North, Maine Central Railroad tracks to the east, the Presumpscot River to the South and Route 202 to the West. The site was reportedly first developed for industrial use in the 1700s, and over the years uses included a saw mill, grist mill, manufactured wood board mill and the steel mill whose remnants presently occupy the site.

The site is presently occupied by a former mill building constructed primarily of concrete and brick. The majority of the building consists of two levels, including a basement that is partially below grade. According to S.W. Cole, the building included a boiler house,

forge shop, press building, melt building and offices. The forge shop and boiler house have been razed.

Public water and sewer are available to the site area. Portland Water District records for South Windham indicate that a number of residences generally east of the site have water supply wells. The closest wells to the site include the Boulanger, Georgatos and Reed residences, located about 500 to 1,000 feet to the northeast. Site topography indicates these residences are located at an elevation 20 to 40 feet higher than the site.

### *2.1.2 Prior Subsurface Investigations*

#### S.W. Cole

Subsurface investigations by S. W. Cole in 1995 and 1996 included completion of twenty-four test pits targeting former storage tanks and other areas of potential concern. Soil samples were screened for volatile organic compounds with a photoionization detector (PID) and six soil samples were tested in a laboratory either for fuel oil, pesticides, PCBs, or heavy metals.

S. W. Cole identified heavy oil-impacted soil at the northern end of the site near Depot Street. The impacted soil was located in the vicinity of a two former above-ground heavy oil storage tanks (now removed). S. W. Cole removed approximately 11 tons of soil impacted by the heavy oil. The MDEP assigned a "Baseline-2" clean-up goal for the site. This goal includes removal of soils with fuel oil concentrations of 200 to 400 parts per million (ppm) based on field screening instrumentation. The Baseline-2 goal is generally applicable to sites in downtown urban areas or commercial strips where groundwater is not likely to be used in the future.

S. W. Cole's 1997 report indicated that the MDEP Baseline 2 goal was met following impacted soils removal. S. W. Cole further reported that "field headspace testing of soil samples from test pits adjacent to known and reported locations of the eleven storage tanks indicated non-detectable levels of ionizable organic compounds." S. W. Cole reported that six of the eleven fuel storage tanks remained at the site at the time of their investigation. The six tanks, formerly located in the boiler house, have since been removed and no subsurface impacts were reported.

Laboratory testing of soils by S. W. Cole detected no volatile organic compounds, and copper was the only heavy metal detected at concentrations higher than naturally-occurring soils. Laboratory testing of oil-impacted soil removed from the site identified no semi-volatile organic compounds using the toxicity characteristic leaching procedure (TCLP).

#### Jacques Whitford

In August, 2003, Jacques Whitford completed supplemental investigations including twelve test pits, six hand augers and twenty-three surface soil samples at the 7 Depot

Street site to evaluate areas of potential concern identified during previous site investigations. These areas included:

- Two former above ground fuel storage tanks (15,000 and 10,000 gallon capacity) near the railroad tracks on the east side of the site where oil-stained soils were observed during a previous site investigation;
- Two 1,000 gallon underground wastewater tanks adjacent to the north wall of the facility;
- Former 3,000 gallon above-ground fuel tank located at the end of a rail spur on the east side of the site;
- Transformer pad/electrical substation on the south side of the site;
- Former drum storage area at the south end of the former mill building;
- Former garage at the south end of the site; and
- Two floor drains on the ground floor of the main mill building.

#### *Test Pits*

On August 4, 2003, twelve test pits (TP-101 to TP-112) were advanced to evaluate areas of potential concern (refer to Jacques Whitford Figure 2, Appendix A). The rationale for each is listed below.

Sample ID	Location/Rationale
TP101	Adjacent to former wastewater holding tanks
TP102	In area of stressed/sparse vegetation during site walk on June 27, 2003
TP103	In area of stressed/sparse vegetation during site walk on June 27, 2003
TP104	Former No. 6 oil spill clean up area
TP105	Former No. 6 oil spill clean-up area
TP106	Former 250K gallon above ground fuel oil tank
TP107	Downslope from former Depot Energy Company
TP108	Downslope from former Depot Energy Company
TP109	Adjacent to former 15K gallon above ground fuel oil tank
TP110	Adjacent to former 10K gallon above ground fuel oil tank
TP111	Former outside drum storage area
TP112	River side of former garage

Jacques Whitford observed the test pitting, screened the soil with a PID, collected soil samples for laboratory analysis, and recorded observations pertaining to the physical characteristics of the soil on test pit logs.

#### *Hand Augers*

On August 5, 2003, Jacques Whitford advanced borings at six locations with a hand auger (HA-1 to HA-6 on Figure 2, Appendix A). These borings were advanced to auger refusal on cobbles which varied from 0.5 to 1.5 feet below ground surface.

Sample ID	Location/Rationale
HA-1	Adjacent to outside transformer pad
HA-2	Adjacent to outside transformer pad
HA-3	Along exterior building wall, adjacent to interior floor drain in building basement
HA-4	Apparent oil-stained surface soils (2 ft x 5 ft)
HA-5	From floor drain on basement level of building
HA-6	In area of apparent oil-stained surface soils (3 ft x 6 ft)

### *Surface Soil Samples*

Based on test data collected for the site during the test pit and hand auger programs, Jacques Whitford collected surface soil samples from inside and outside the former mill building for polychlorinated biphenyls (PCB) testing. One sample (SS105) was tested for metals. The sample locations are labeled SS1-SS15 and SS101-SS108 on Figure 2.

Sample ID	Location/Rationale
SS1	South of floor "cut out" along north building wall; PCBs identified in drain
SS2	North of floor "cut out" along north building wall
SS3	East of floor "cut out" along north building wall
SS5	Floor "cut out" along north building wall
SS6	Floor drain along south building wall
SS7	Soil from concrete floor south of maintenance shop
SS8/SS9	Soil from concrete floor in maintenance shop
SS10	Soil from concrete floor near former transformer
SS11	East of stained soil outside building; PCBs identified in stained soils
SS12	South of stained soil outside building
SS13	West of stained soil outside building
SS14	Stained soils outside building (0-0.5 ft)
SS15	Stained soils outside building (0.5-1 ft)
SS101	Floor drain along south building wall
SS102	Soil on concrete floor on basement level
SS103	Soil on concrete floor on basement level
SS104	Soil on concrete floor on basement level
SS105	Soil from outside south wall, adjacent to interior drain (metals testing)
SS106	Soil from outside south wall, adjacent to interior drain (PCB testing)
SS107	Soil from outside south wall, down slope from interior drain
SS108	Soil from outside south wall, down slope from interior drain

Jacques Whitford collected samples HA-5 and SS-5 from the center of an approximately 1-ft x 1 ft square cut out in the concrete floor of the former mill building. Jacques Whitford collected samples SS1, SS2, and SS3 by coring through the concrete floor in the vicinity of the "cut out." SS4, proposed for the west side of the "cut out," could not be completed due to an obstruction.



Jacques Whitford collected samples SS6 and SS101 from a floor drain along the south wall of the building. The drain was about 1.5 ft x 1.5 ft square and contained water at a depth of about 2 ft below the floor level. Soil samples SS106, SS107 and SS108 were collected outside the building, adjacent to the floor drain. Hand excavation along the building wall did not identify a discharge pipe from the drain. Jacques Whitford indicated that the drain may have an open bottom or sides under the building floor, with no point discharge.

Surface samples SS7, SS8/ SS9 (duplicate of SS8), SS10, SS102, SS103, and SS104 were composed of soil-like material that had accumulated on the building's concrete floor. SS7, SS8/SS9 and SS10 were collected from the second floor of the building; the others were collected from the basement/ground level. Sample locations were selected based on proximity to oil stains, maintenance activities and former electrical equipment, such as transformers. Oil stained concrete and wood was also observed inside the building; these materials have not been sampled to date.

#### *Chemical Testing*

Selected soil samples were tested for VOCs (EPA Method 8260-B), diesel-range organics (DRO), the eight RCRA metals, and PCBs. Samples were selected based on field PID readings, visual indications possible impact, and position at or near the water table. Sample numbers, dates, depths and analytical results are summarized on the data table prepared by Jacques Whitford in Appendix A.

Jacques Whitford tested soils from TP-101, TP-104, TP-107, TP-111 and HA-6 for DRO and VOCs. DRO concentrations ranged from approximately 9 mg/kg (TP-104) to 9,100 mg/kg (HA-6). DRO fingerprinting indicated the presence of heavy oil, such as motor oil, in the samples tested. Lighter oils, such as gasoline, diesel or #2 fuel oil, were not identified. This finding is consistent with the results of VOC testing where no constituents of lighter oils were identified, such as benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl-tertiary butyl ether (MTBE). Methylene chloride and trichlorofluoromethane were detected in each of the samples and are suspected to be the result of cross contamination in the laboratory.

Soil samples from TP-102, TP-103, TP-107, TP-110, TP-112, SS-101 and SS105 were sampled for the eight RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). With the exception of arsenic, the metals concentrations were below the DEP Remedial Action Guidelines (RAG) for residential settings. Arsenic was detected slightly above the RAG of 10 mg/kg at TP-102 (16 mg/kg), TP-103 (11 mg/kg), TP-110 (16 mg/kg), TP-112 (22 mg/kg), SS101 (17.5 mg/kg) and SS105 (13.6 mg/kg).

PCB Results for Former Transformer Pad: Relatively low concentrations of PCBs were detected in surface soils adjacent to the former transformer pad. Total PCB concentrations ranged from 0.119 mg/kg (parts per million – ppm) at HA-1 to 0.056 ppm at HA-2 (Figure 2).

PCB Results for Stained Surface Soils along South Building Wall: Jacques Whitford detected 2.8 ppm total PCBs in surface soils sampled from apparent oil-stained soils along the south building wall (SS14). The PCBs detected included Aroclor 1016, 1242, 1254, and 1260.

Surface soil samples collected at SS11, 10 feet to the east of SS14, were non-detect for PCBs. Likewise, surface soils collected at SS12, 10 feet to the south of SS14, were non-detect for PCBs. Surface sample SS13, 10 feet west of SS14, contained total PCBs of 0.135 ppm. The testing indicates limited aerial extent of PCB impacts at SS14.

PCB concentrations appear to decrease with depth at this location given detection of 2.8 ppm total PCBs in surface sample SS14 (0-0.5 ft), 1.8 ppm in sample SS15 (0.5-1 ft), and 0.63 ppm detected in HA-4 (1-2 ft); each of these samples were co-located.

PCB Results for Floor "Cut Out" along North Wall of Basement: Jacques Whitford detected 77 ppm total PCBs in surface soils sampled from the cut out in the concrete floor of the building basement (SS5). PCBs detected included Aroclor 1254 and 1260.

Soils sampled beneath concrete flooring at SS1, 10 feet south of SS5 contained 0.09 ppm total PCBs. Soils beneath the concrete floor at SS2, 5 feet north of SS5, contained 0.817 ppm total PCBs. Soils beneath concrete at SS3, 10 feet east of SS5, contained non-detectable PCB concentrations.

Test data indicate decreasing PCB concentrations with depth at the concrete floor "cut out." The surface soil sample SS5 (0-0.5 ft) contained 77 ppm total PCBs, while HA-5 (0.5 to 1 ft depth) contained 36 ppm total PCBs.

PCB Results for Floor Drain and Exterior Soils along South Wall of Basement: Total PCBs at 173 ppm (Aroclor 1254) were detected in sediments collected from a floor drain located along the south wall of the building basement (SS6). Confirmatory sampling from the same drain indicated 262 ppm PCBs (SS101) and 570 ppm PCBs (SS101 duplicate).

Soils sampled from a depth of 1.5 feet outside the building and adjacent to the interior floor drain (SS106) contained 113 ppm PCBs (Aroclor 1254). SS107, located about 10 feet west of SS106 (toward the river), contained 120 ppm Aroclor 1254; the sample depth was about 1 1/2 feet. SS108, located about 11 feet west of SS107, contained 9.3 ppm Aroclor 1254; the sample depth was about 1 foot.

PCB Results for Soil Build-up on Interior Concrete Floors: Material sampled from the surface of the concrete floor inside the building contained total PCBs ranging from 11 ppm (SS8) to 138 ppm (SS103). The PCBs detected included Aroclor 1254 and 1260.

## Ransom Environmental

Ransom tested three background samples for arsenic on November 8, 2004. Surface soil samples were collected from the Windham Historical Society grounds, the US Postal Service Training Center and the South Windham Fire Department property. The concentrations of arsenic detected were 28.3, 5.1 and 24.1 mg/kg, respectively. These concentrations are similar to those detected at the 7 Depot Street site, and indicate the arsenic is naturally occurring.

### **2.2 13 Depot Street**

#### **2.2.1 Site Description**

The 13 Depot Streets site is located on the southern side of Depot Street adjacent to Maine Central Railroad tracks, approximately 300 feet west of High Street. The site is designated by the Windham Assessor's Office as Map 38, Lot 6 and is approximately 40,850 square feet. The site is improved with a one-and-a-half story, wood frame garage, a one-and-a-half story wood frame former railroad station, a one-story wood-frame apartment and storage building, two steel railroad box cars with wood floors, one 10,000-gallon railroad tank car, and an in-ground scale. The site is served by public sewer and water. A site plan is shown on Figure 3.

The garage is constructed on a concrete slab and contains one floor drain and an above ground 275-gallon furnace oil tank. The former railroad station sits on a concrete slab with no basement and is used as storage for automobile transmissions and other automobile parts. The apartment and storage building contains an above ground 275-gallon furnace oil tank and numerous automotive parts and supplies. The two steel-walled, wooden-floor, railroad boxcars are used for storage for automotive engines, transmissions, and other miscellaneous materials.

The 10,000-gallon tank car was installed in 1983 between the former depot station and the southern railroad boxcar on the western edge of the site. It is constructed on a steel frame with a concrete foundation and it is used to store #2 fuel oil. The tank is surrounded on all sides by an earthen berm. The 240 square-foot concrete scale is located adjacent to the warehouse on the western side and apparently is drained via a discharge pipe that discharges into the drainage ditch at the southeastern border of the Subject Site.

A drainage ditch is located adjacent to the southern and western boundaries of the property. A PVC pipe discharges to the drainage ditch and is reportedly connected to the subsurface area near the in-ground scale west of the warehouse.

## *2.2.2 Prior Subsurface Investigations*

### Acadia Environmental

Acadia Environmental Technology (Acadia) of Portland, Maine prepared an underground storage tank (UST) Site Assessment Report in November 1993 for Merrill and Camilla Laskey, the former owners of the 13 Depot Street site. The report addressed a 500-gallon UST removed from the site on October 28, 1993.

The tank was installed in 1988 and was located as indicated on Figure 2. Upon removal, the UST showed light pitting on one end. The condition of the underground piping was reported to be excellent. A gasoline pump was enclosed directly above the tank in a small shed. Acadia reported a PID jar headspace result of 591 ppm in "black, wet, coal, organic, clay" approximately 3 feet below ground surface from the north end of the tank grave. All other PID readings were less than 100. A laboratory sample yielded 77 mg/kg by MDEP Method 4.2.3 for gasoline. During the tank removal, Acadia contacted Jon Woodard of the MDEP and was instructed to collect the laboratory sample, backfill the excavation and report the results. MDEP required no further action.

### Jacques Whitford

Based on the findings of a Phase I environmental assessment of the 13 Depot Street Site, Jacques Whitford conducted Phase II fieldwork at the site between May 7 and 12, 2004. The fieldwork included excavation of test pits and soil sampling for PID screening and laboratory analysis.

### *Test Pits and Soil Sampling*

On May 7, 2004, Jacques Whitford excavated ten test pits at the locations depicted on Figure 3. Test pits were terminated at bedrock refusal between 1.8 and 10 feet below ground surface (bgs). At each test pit location, Jacques Whitford, collected bag headspace samples at 2-foot intervals. Each soil sample was screened in the field for VOC content using a PID. Jacques Whitford also collected bag headspace samples at five surface sampling locations (HS-1 to HS-5) for PID testing.

Based on PID readings and location, Jacques Whitford chose three of the sample intervals for chemical testing for GRO and VOCs. Jacques Whitford submitted the sample from TP-4 (2-4 feet below ground surface), for testing of GRO and VOCs; this sample had the highest PID reading at the site (>1000 ppm). Jacques Whitford also conducted VOC testing on soils with the highest PID reading from TP-2, located adjacent to a boxcar, and from TP-3, located in an apparent oil stained area in the gravel parking lot.

Jacques Whitford collected samples SS-1, SS-2, and SS-3 for PCB testing. These three samples were from areas of surface soil staining near stored transmission parts (SS-1), an aboveground hydraulic lift (SS-2), and from sediment in the floor drain in the garage (SS-3).

Two surface soil samples (SS-4 and SS-5) were collected for testing of the eight RCRA metals. These soils were sampled from areas of visible surface oil staining.

#### *PID Screening and Chemical Test Results*

PID readings varied from 7 to over 1,000 ppm. The only readings over 100 ppm were in TP-2, TP-3, and TP-4. Readings >1000 ppm were observed from 2-6 feet below ground surface in TP-4. The PID readings in TP-4 decreased with depth below the 4-6 feet depth interval. TP-4 is located in a downhill direction from the removed gasoline UST at the site.

Laboratory test results for soils sampled at the 13 Depot Street site are summarized below. The results indicate gasoline-impacted soils in test pit TP-4, located downslope from a former underground gasoline tank. The only other VOC detected in the soils was acetone, a likely laboratory contaminant. PCBs were not detected in the surface soil samples (SS-1, SS-2 and SS-3).

Analyte	Units	TP-3, 2-4	TP-4, 2-4	SS-4	SS-5
Acetone	ug/kg	197	<23,400	NA	NA
n-Butylbenzene	ug/kg	<7.1	2,570	NA	NA
Ethylbenzene	ug/kg	<7.1	5,440	NA	NA
4-Isopropyltoluene	ug/kg	<7.1	2,100	NA	NA
Naphthalene	ug/kg	<7.1	16,700	NA	NA
n-Propylbenzene	ug/kg	<7.1	3,340	NA	NA
Toluene	ug/kg	<7.1	4,320	NA	NA
1,2,4-Trimethylbenzene	ug/kg	<7.1	50,900	NA	NA
1,3,5-Trimethylbenzene	ug/kg	<7.1	24,400	NA	NA
m,p-Xylene	ug/kg	<14.2	26,400	NA	NA
o-Xylene	ug/kg	<7.1	2,990	NA	NA
Gasoline Range Organics	mg/kg	NA	837	NA	NA
Arsenic	mg/kg	NA	NA	12.8	15.6
Barium	mg/kg	NA	NA	47.4	24.1
Chromium	mg/kg	NA	NA	15.4	17.6
Lead	mg/kg	NA	NA	34.5	49.5

NA denotes not analyzed

With the exception of arsenic, the metals concentrations were below the MDEP Remedial Action Guidelines (RAG) for residential settings. Arsenic was detected slightly above the

RAG of 10 mg/kg in soil samples SS-4 and SS-5. Based on background soils sampling by Ransom, the arsenic appears to be naturally occurring.

### 3.0 RESPONSE ACTION PLAN

#### 3.1 7 Depot Street

##### 3.1.1 *Petroleum-Impacted Soils*

Given the industrial history of the site and availability of public water supply to the site area, MDEP has requested implementation of Baseline-2 soil clean-up guidelines for any impacts from heavy oil products (e.g., bunker oil, motor oil). For soils impacted by light petroleum products, such as gasoline, MDEP has requested implementation of intermediate clean-up guidelines for soils. The clean-up requirements for each are:

Baseline-2: removal free product and remove or remediate contaminated soil to: 500 to 1,000 ppm gasoline range organics and 200 to 400 ppm diesel range organics, each as measured by field headspace analysis.

Intermediate: remove or remediate contaminated soil containing greater than 10 mg/kg diesel range organics, or 5 mg/kg gasoline range organics as determined by a DEP-approved laboratory method.

Prior work at the 7 Depot Street site by S.W. Cole involved investigation and clean-up of soils impacted by No. 6 fuel oil. Soils testing following excavation of impacted soils confirmed that the Baseline-2 standard was met.

Investigations by Jacques Whitford and subsequent review of all prior site investigation reports by Ransom indicated the Baseline-2 standard has been met for the areas sampled, including oil-stained surface soils. The maximum PID reading identified by Jacques Whitford during their investigations in 2004 was 8.5 ppm. Chemical testing of stained soils indicated that the oil was a heavy-end product, such as motor oil.

Soils impacted by light petroleum products, such as gasoline, have not been identified at the 7 Depot Street site. Excavation contractors working at the site will be instructed to contact Ransom should soils with petroleum odors or other evidence of contamination be encountered. In such cases, Ransom will conduct a site visit and perform sampling of impacted media to determine the appropriate course of action. MDEP will be notified if unanticipated subsurface contamination is encountered.

##### 3.1.2 *PCB-Impacted Soils*

Soils from the floor drain and the concrete cut-out in the building basement, and areas sampled outside the mill building contained PCBs at concentrations ranging from <32 to 570 ppm. The PCBs were likely released from maintenance and handling of former transformers and other electrical equipment used at the site. Given the age of the mill

building, it is possible the transformers and electrical equipment were in use prior to 1978. Since the concentrations of PCBs identified in site soils are  $\geq 50$  ppm, the impacted materials are defined by EPA under 40 CFR 761.61 as "PCB Remediation Wastes."

Site development includes the demolition and removal of the former mill building, followed by construction of residential units (refer to Figure 4). Based on EPA criteria under 40 CFR 761.61, the areas of subsurface soil impact (labeled "Area A" and "Area B" on Figures 2, 4 and 5) are categorized as follows.

Area A: Area of PCB-impacted soils located beneath or on the periphery of a proposed paved site access drive. This area meets EPA criteria for a "Low Occupancy Area" in that it constitutes an "unoccupied area outside a building" and is a location where "occupancy is transitory" (40 CFR 761.61). More specifically, a Low Occupancy Area is an area where occupancy for individuals not wearing dermal and respiratory protection is less than 335 hours per calendar year (an average of 6.7 hours per week).

In accordance with 40 CFR 761.61, the clean-up level for PCB-impacted soils in Low Occupancy Areas is  $\leq 25$  ppm, or  $\leq 100$  ppm if a soil cap is installed.

Area B: Area of PCB-impacted soils located beneath landscaping and lawn of residential units. This area potentially meets EPA criteria for a "High Occupancy Area" in that it constitutes an area where occupancy for individuals not wearing dermal and respiratory protection is 335 hours or more (an average of more than 6.7 hours per week).

Clean-up levels for PCB-impacted soils in High Occupancy Areas is  $\leq 1$  ppm or  $\leq 10$  ppm with a soil cap.

#### Additional Testing

Ransom will conduct additional testing to delineate PCB-impacted soils following demolition and removal of the former mill building. In accordance with the EPA self-implementing pre-cleanup sampling approach as provided in §761.61 Subpart N, sampling will utilize a 3-meter grid centered around the floor drain on the basement level of the former mill building. Proposed sample locations are labeled B1 through B12 on Figure 5.

Soils will be sampled continuously over 2-foot intervals using direct-push drilling; each hole will be advanced to a depth of 6 to 8 feet. Soils will be composited from each 2-foot sample interval, yielding three to four samples from each boring for laboratory testing of PCBs. Soils will be tested for PCBs in the laboratory in accordance with EPA Method SW-846.

#### NRPA Permitting

Given anticipated soil excavation within 75 feet of the Presumpscot River, the project will fall under the Natural Resources Protection Act (NRPA). The project team will

request a site visit by MDEP's Land and Water Quality Bureau to identify specific requirements under NRPA and the Army Corps of Engineers. The Windham Code Enforcement Office will also be contacted relative to possible requirements under Municipal Shoreland Zoning rules.

#### Soil Removal and Disposal

Prior to soil removal, notice will be provided to the EPA Regional Administrator (at least 30 days prior to clean-up) and a PCB clean-up plan will be prepared for review and approval by EPA as required under 40 CFR 761.61. The plan will include, as required, schedule, disposal technology and approach.

Area A: Following demolition and removal of the former mill building, PCB-impacted soils  $\geq 25$  ppm will be targeted for removal in Area A by a hazardous waste contractor based on the findings of the additional soil testing. Following soil removal and backfilling to proposed site grades, a soil cap and shore stabilization (e.g., rip-rap) will be installed in accordance with 40 CFR 761.61. The cap and shore stabilization will assist in stabilizing surface soils, reduce infiltration into the subsurface and substantially reduce the potential for exposure to PCB-impacted soils not excavated.

The PCB clean-up target of 25 ppm is more stringent than the 100 ppm threshold allowed by EPA in Low Occupancy Areas with the installation of a soil cap. Based on soil test data obtained for the site to date, it is anticipated the 25 ppm target can be reached with reasonable effort. Should shallow groundwater or proximity to the river inhibit reaching the 25 ppm goal, a secondary goal of 100 ppm will be implemented as allowed by EPA with installation of a soil cap.

Area B: Following demolition and removal of the former mill building, PCB-impacted soils  $\geq 1$  ppm will be targeted for removal in Area B by a hazardous waste contractor. Prior explorations in this area indicate that a relatively small volume (<20 cubic yards) will require excavation for PCB impacts.

The excavation work in areas A and B will be performed using an excavator and excavated soils will be transferred directly to trucks or roll-off containers lined with polyethylene sheeting for subsequent transport to the disposal facility. Tarps will be used to cover loads prior to transport. Following appropriate waste characterization and coordination with an appropriate disposal facility, the excavated soil will be disposed of in accordance with §761.61(a)(6)(v).

TSCA-regulated remediation waste ( $\geq 50$  ppm PCBs) will be disposed of at the CWM Chemical Services, LLC facility located in Model City, New York. If segregation is feasible, soils with concentrations of PCBs <50 ppm will be disposed at either the Crossroads special waste landfill in Norridgewock, Maine or the Sawyer landfill in Hamden, Maine.



### Post-Excavation Testing

Ransom will document soil conditions in each excavation area following the excavation of PCB-contaminated soil. The soil sampling will be conducted in accordance with §761.61(a)(6). Ransom will collect confirmatory soil samples from the walls and the bases of each of the excavations. If bedrock is encountered at the walls or base, samples will not be collected.

If the excavation is safe to enter, then the sampling will be conducted based on a 1.5-meter grid interval in accordance with the composite soil sampling procedure outlined in 40 CFR 761.289 for point sources of PCB contamination. If the excavation is unsafe to enter, sampling grids will be impossible to set up, and therefore, composite soil samples will be collected by dragging a scoop up the sidewalls and across the base of the excavation. Ransom will make the determination if the excavation is unsafe to enter based on OSHA guidelines.

### Soil Cap

In accordance with 40 CFR 761.61, the cap proposed for Area A will consist either of compacted soil with a minimum thickness of 25 cm (10 inches) or concrete or asphalt cap with a minimum thickness of 15 cm (6 inches). Other EPA requirements include:

- The cap will be of sufficient strength to maintain its effectiveness and integrity during the use of the cap surface which is exposed to the environment.
- The cap will not be contaminated at a level  $\geq 1$  ppm PCB per Aroclor™ (or equivalent) or per congener.
- Repairs will begin within 72 hours of discovery for any breaches which would impair the integrity of the cap.
- The properties of a soil cap include: a) permeability equal to or less than  $1 \times 10^{-7}$  cm/sec; (b) percent soil passing No. 200 Sieve  $>30$ ; (c) liquid limit  $>30$ ; and (d) Plasticity Index  $>15$ .

### Deed Restriction

EPA requires deed restrictions for caps and Low Occupancy Areas within 60 days of completion of a cleanup activity (40 CFR 761.61). If necessary, the owner of the 7 Depot Street site will record, in accordance with State law, a notation on the deed to the property, or on some other instrument which is normally examined during a title search, that will in perpetuity notify any potential purchaser of the property:

- That the land in Area A has been used for PCB remediation waste disposal and is restricted to use as a low occupancy area as defined in §761.3;

- Of the existence of the cap in Area A and the requirement to maintain the cap;
- The applicable cleanup levels left at the site in Area A, under the cap.

The owner will submit a signed certification to the EPA Regional Administrator that he/she has recorded the notation.

### **3.1.3 PCB-Impacted Building Materials**

Testing has identified PCB-impacted materials inside the former mill at concentrations ranging from about 5 to 138 ppm. Materials tested include soil-like material that has accumulated on top of the concrete floors on the basement level and on the second floor of the building (Figure 2). Other materials possibly impacted by PCBs include concrete and wood in areas where oil stains were observed.

Following additional characterization of building materials for PCBs and EPA approval of the proposed PCB mitigation plan, a hazardous waste disposal contractor will remove PCB-impacted soil build-up and other materials from the building interior and manage the materials as PCB Remediation Waste (40 CFR 761.61). Follow-up testing of remaining concrete and other building surfaces will be conducted to confirm removal of PCB Remediation Waste prior to demolition. Confirmatory testing will be conducted in accordance with Subpart O of 40 CFR 761.61, "Sampling to Verify Completion of Self-Implementing Cleanup and On-Site Disposal of Bulk PCB Remediation Waste and Porous Surfaces."

Bulk waste materials will be tested prior to disposal in accordance with requirements of the disposal facility. TSCA-regulated remediation waste ( $\geq 50$  ppm PCBs) will be disposed of at the CWM Chemical Services, LLC facility located in Model City, New York. If segregation is feasible, soils with concentrations of PCBs  $< 50$  ppm will be disposed at either the Crossroads special waste landfill in Norridgewock, Maine or Sawyers in Hamden, Maine.

## **3.2 13 Depot Street**

### **3.2.1 Clean-up Goal for Petroleum-Impacted Soils**

As detailed in section 3.1.1, MDEP has established a clean-up goal for gasoline-impacted soils at the site of 5 mg/kg GRO (lab result). For soils impacted by heavier oils (fuel oil, kerosene, motor oil), MDEP has assigned a "Baseline-2" goal of 200 to 400 ppm (field screening with a PID).

### **3.2.2 Soils Excavation**

#### Gasoline-Impacted Soils

A hazardous waste contractor will excavate gasoline-impacted soils in accordance with the clean-up goal. The excavation work will be performed using an excavator and

excavated soils will be transferred directly to trucks or roll-off containers lined with polyethylene sheeting for subsequent transport to the disposal facility. Tarps will be used to cover loads prior to transport. MDEP will be notified at least five working days prior to the start of excavation activities.

Ransom will provide monitoring of soils in the excavation with a photoionization detector (PID) calibrated to the MDEP set point for gasoline impacted soils. Based on recommendations of MDEP, soils with PID readings greater than 50 ppm will be targeted for excavation.

#### Surface Oil Stains

MDEP has requested removal of surface soils visibly impacted by oil. Past use of the site for automobile parts repair and storage has resulted in areas where surface soils have been impacted by petroleum products such as motor oil and transmission fluid. The hazardous waste contractor will excavate areas of visibly stained surface soils and transfer the soil to a truck or roll-off container. The excavation will be monitored by Ransom who will use a PID to identify soils requiring excavation and off-site disposal/treatment (i.e., soils with PID readings of 200 to 400 ppm).

#### **3.2.3 Excavated Soil Testing and Disposal**

For excavated soils impacted by gasoline spilled from the former underground tank, MDEP will provide confirmation that the materials contain "virgin hydrocarbon" and reclamation at an in-state recycling facility is feasible. For excavated soils impacted by motor oil and transmission oil, testing will be conducted in accordance with the requirements of the disposal/treatment facility.

It is anticipated that the excavated petroleum-impacted soil will be reclaimed at Commercial Recycling in Scarborough, Maine. Prior testing of site soils has not identified constituents such as metals or PCBs that would render soils impacted by transmission or motor oil ineligible for reclamation in state.

#### **3.2.4 Post-Excavation Testing**

Ransom will document soil conditions in the excavation area following excavation of gasoline-impacted soil. In the area of gasoline-impacted soil excavation, Ransom will collect confirmatory soil samples from the walls and the base of the excavation, and submit the samples for GRO and VOC (EPA Method 8260B) analysis. In the area of heavier oil-impacted soils excavation, Ransom will collect soil samples from the walls and base of the excavation for screening with a PID using the MDEP-approved headspace method.

The number of samples will be contingent upon the size of the excavation and soil types encountered. A minimum of four wall samples and one bottom sample will be collected. If bedrock is encountered at the walls or base, samples will not be collected.

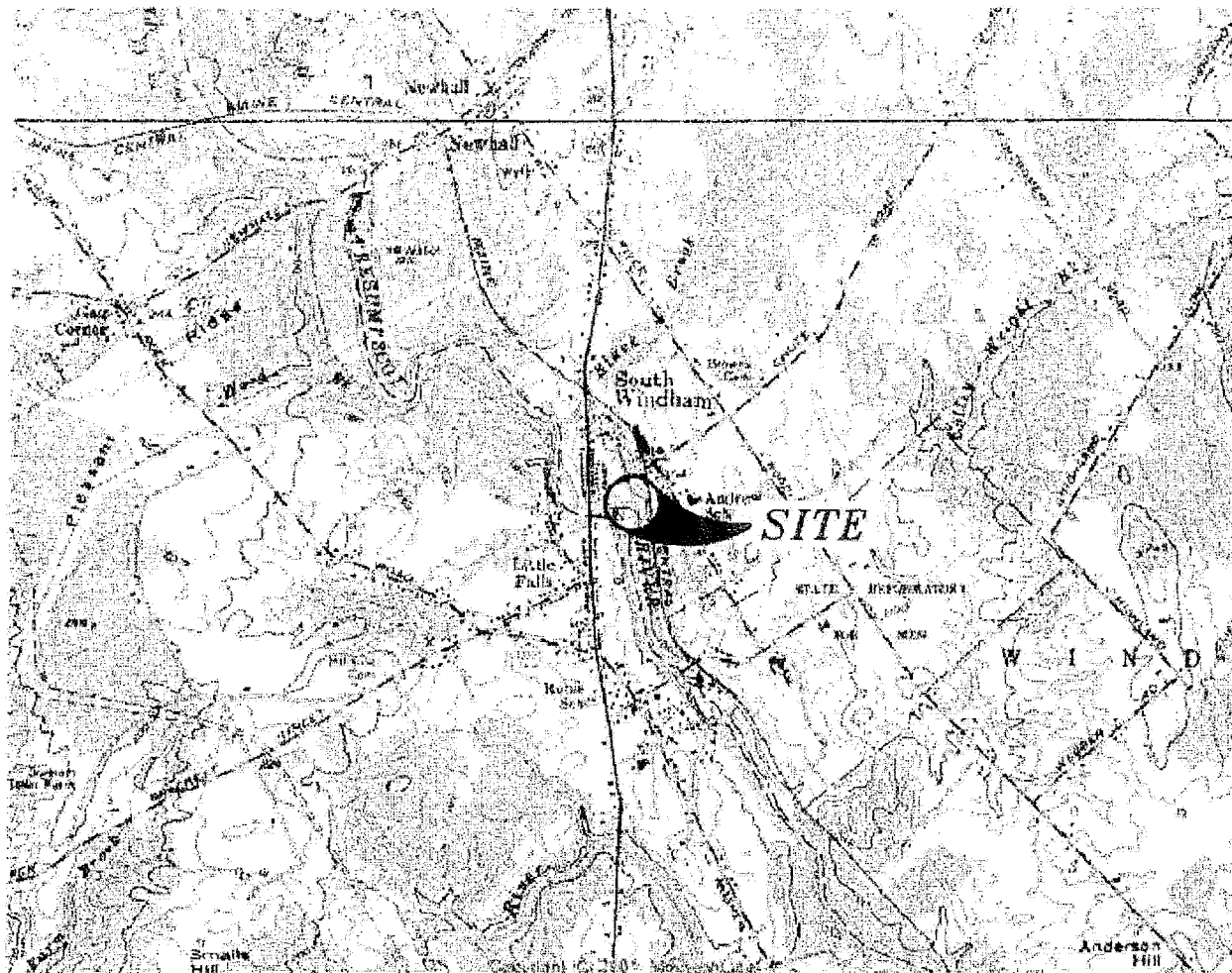
#### 4.0 DOCUMENTATION

Ransom will provide documentation of clean-up for both the 7 and 13 Depot Street parcels for MDEP review. The report will include, at a minimum:

- Site clean-up methodologies
- Photo-documentation of clean-up activities
- Confirmatory test data
- Site restoration measures
- Waste disposal documentation

Upon review and approval of the site clean-up, we understand MDEP will issue a "Certificate of Completion." This certificate documents MDEP concurrence that site clean-up was completed in accordance with the Voluntary Response Action Plan presented herein.

## Figures



TAKEN FROM U.S.G.S. 7.5x15 MINUTE SERIES TOPOGRAPHIC  
MAP OF GORHAM, MAINE DATED 1975

CONTOUR INTERVAL IS 3 METERS

SITE COORDINATES: LATITUDE 43°44'06"  
LONGITUDE 70°25'32"

UTM COORDINATES: 48:43:165mN  
03:85:220mE



QUADRANGLE LOCATION



SCALE in FEET  
1:25,000

**RANSOM**

Environmental  
Consultants, Inc.

**SITE LOCATION MAP**

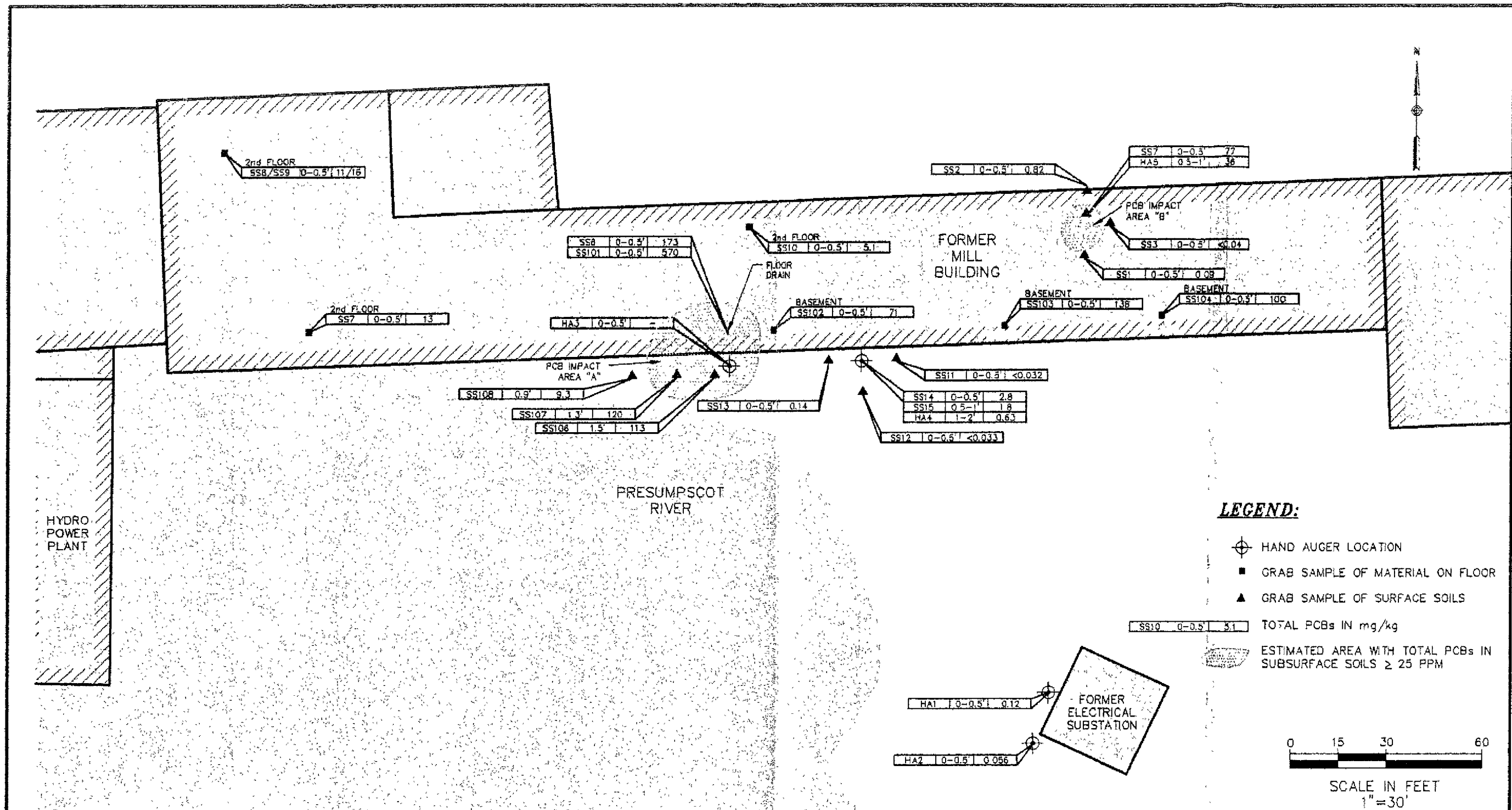
PREPARED FOR:

RENEE LEWIS  
PORTLAND, MAINE

SITE:

7 AND 13 DEPOT STREET  
WINDHAM, MAINE

DATE: MAY 2005  
PROJECT: 046016  
FIGURE: 1



**RANSOM** Environmental Consultants, Inc.

PREPARED FOR:

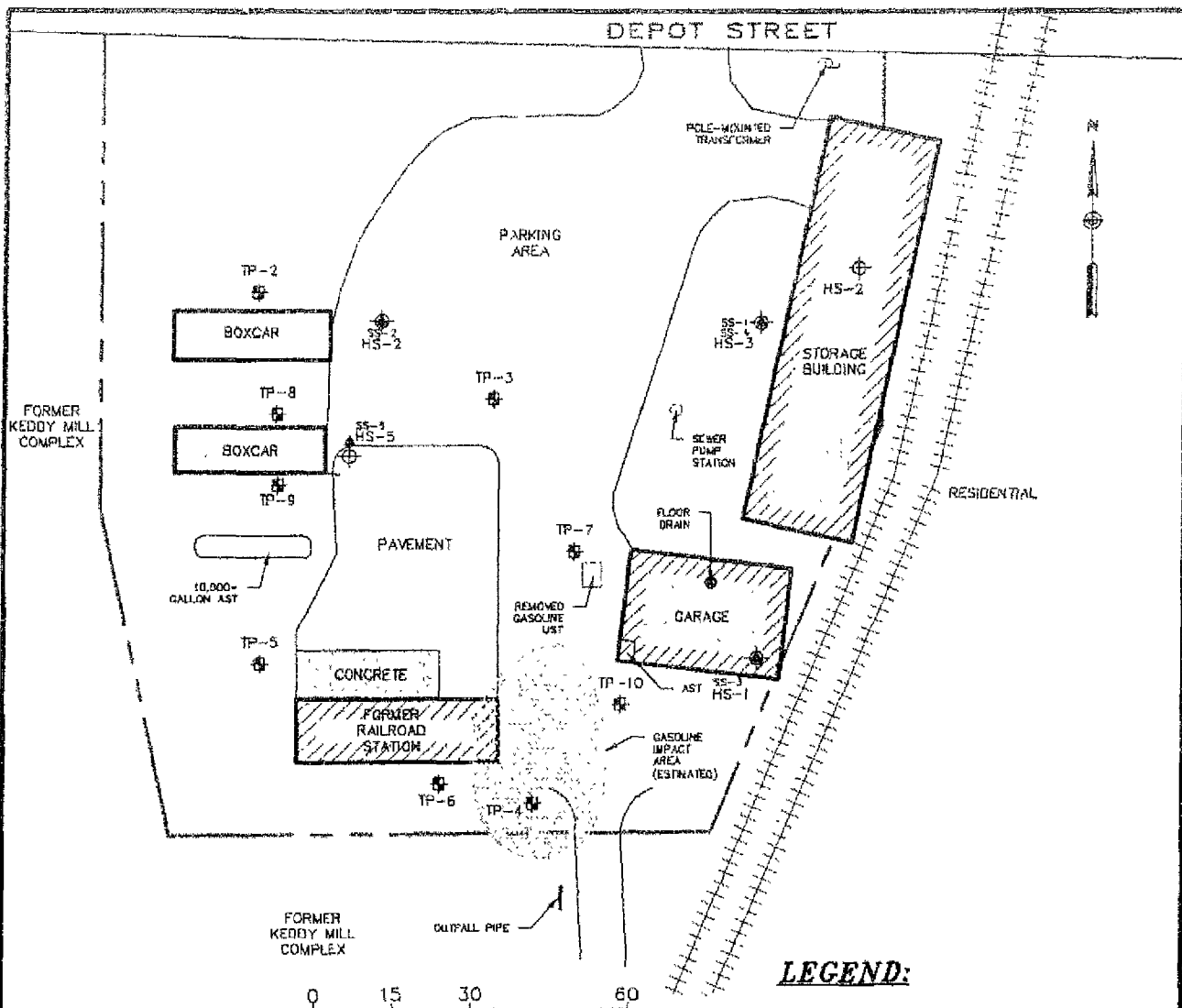
RENEE LEWIS  
PORTLAND, MAINE

SITE:

7 DEPOT STREET  
WINDHAM, MAINE

**PCB SAMPLE PLAN**

**VIL-RESP04089**  
PROJECT: 046016  
FIGURE: 2



### LEGEND:

- SS-1 ▲ ⊕ SURFACE SAMPLE
- TP-1 ⊕ TEST PIT LOCATION
- — — — — STREAM
- — — — — PROPERTY BOUNDARY
- +++++ RAILROAD TRACKS
- ESTIMATED AREA WITH TOTAL PCBs IN SUBSURFACE SOILS ≥ 25 PPM

### NOTES:

1. SITE PLAN BASED ON DRAWING FROM JACQUES WHITEFORD COMPANY, INC. DATED JUNE 2, 2004.
2. SOME FEATURES ARE APPROXIMATE IN LOCATION AND SCALE.
3. THIS PLAN HAS BEEN PREPARED FOR RENEE LEWIS. ALL OTHER USES ARE NOT AUTHORIZED, UNLESS WRITTEN PERMISSION IS OBTAINED FROM RANSOM ENVIRONMENTAL CONSULTANTS, INC.

**RANSOM**

Environmental  
Consultants, Inc.

### EXPLORATION PLAN

PREPARED FOR:

RENEE LEWIS  
PORTLAND, MAINE

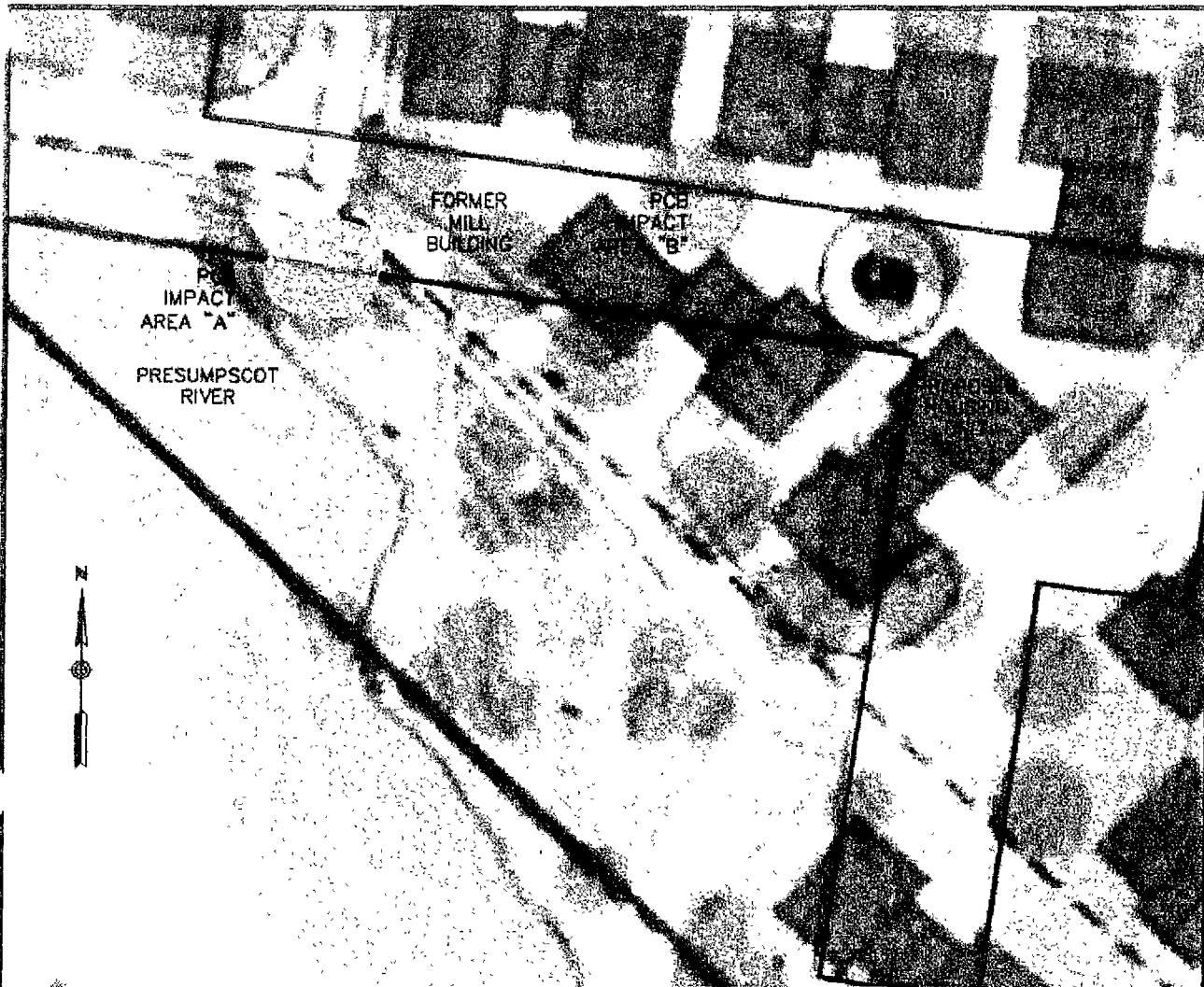
SITE:

13 DEPOT STREET  
WINDHAM, MAINE

DATE: MAY 2005  
PROJECT: 046016  
FIGURE: 3

VIL\_RESP04090





**NOTES:**

1. SITE PLAN BASED ON DRAWING FROM JACQUES WHITFORD COMPANY, INC. DATED SEPTEMBER 2, 2003
2. SOME FEATURES ARE APPROXIMATE IN LOCATION AND SCALE.
3. THIS PLAN HAS BEEN PREPARED FOR RENEE LEWIS. ALL OTHER USES ARE NOT AUTHORIZED, UNLESS WRITTEN PERMISSION IS OBTAINED FROM RANSOM ENVIRONMENTAL CONSULTANTS, INC.

**LEGEND:**



ESTIMATED AREA WITH  
TOTAL PCBs IN SUBSURFACE  
SOILS  $\geq$  25 PPM



SCALE IN FEET  
1"=50'



Environmental  
Consultants, Inc.

PREPARED FOR:

RENEE LEWIS  
PORTLAND, MAINE

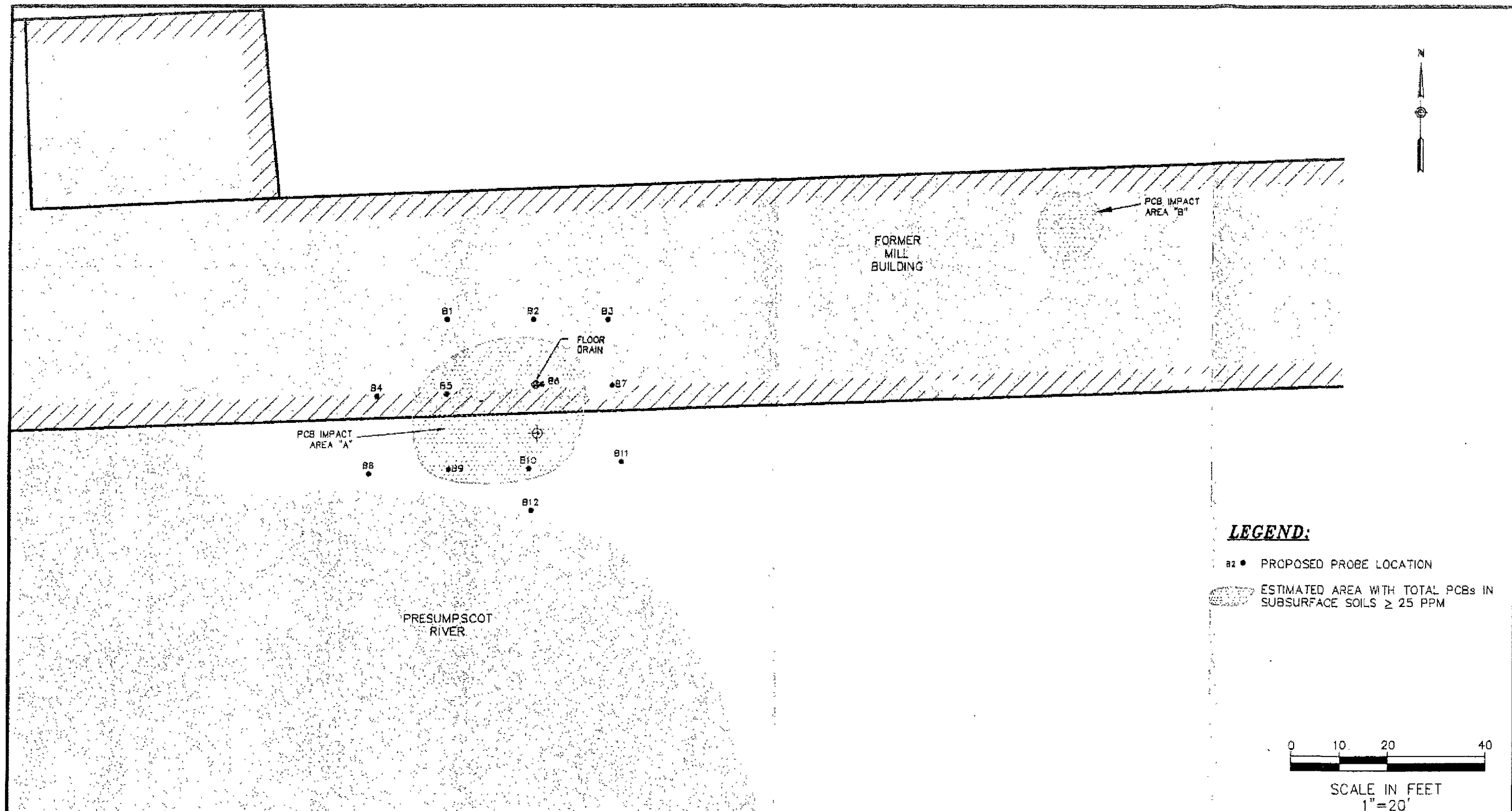
SITE:

7 DEPOT STREET  
WINDHAM, MAINE

**PROPOSED SITE  
DEVELOPMENT**

DATE: JUNE 2005  
PROJECT: 046016  
FIGURE: 4

p:\ME-DWG\2004\046016\046016.dwg Jun 03, 2005 - 10:05am



# **LEGEND:**

B1 • PROPOSED PROBE LOCATION

ESTIMATED AREA WITH TOTAL PCBs IN SUBSURFACE SOILS  $\geq 25$  PPM

## **NOTES:**

1. SITE PLAN BASED ON DRAWING FROM JACQUES WHITFORD COMPANY, INC. DATED SEPTEMBER 2, 2003
2. SOME FEATURES ARE APPROXIMATE IN LOCATION AND SCALE.
3. THIS PLAN HAS BEEN PREPARED FOR RENEE LEWIS. ALL OTHER USES ARE NOT AUTHORIZED, UNLESS WRITTEN PERMISSION IS OBTAINED FROM RANSOM ENVIRONMENTAL CONSULTANTS, INC.

**RANSOM** Environmental Consultants, Inc.

PREPARED FOR:

RENEE LEWIS  
PORTLAND, MAINE

SITE:

7 DEPOT STREET  
WINDHAM, MAINE.

**PROPOSED BORINGS**

**VIL-RESP04092**  
DATE: 04/01/03  
PROJECT: 046016  
FIGURE: 5

**Appendix A**  
**Data from Jacques Whitford Report**

**VIL\_RESP04093**

7 Depot Street  
Windham, Maine  
Soil Analytical Results

Analyte	Maine DEP	TP-101	TP-102	TP-102	TP-103	TP-104	TP-107	TP-107	TP-110
Depth of Sample	Residential	8-10'	0-2'	4-6'	0-2'	10-12'	2-4'	8-10'	0-2'
Date Collected	Guideline	8/4/2003	8/4/2003	8/4/2003	8/4/2003	8/4/2003	8/4/2003	8/4/2003	8/4/2003
<b>DRO (mg/kg)</b>									
DIESEL RANGE ORGANICS		10	NA	NA	NA	U 6.8	NA	9	NA
<b>Metals (mg/kg)</b>									
ARSENIC	10	NA	16	5	11	NA	3	NA	16
BARIUM	10,000	NA	45	98	75	NA	87	NA	81
CADMIUM	27	NA	U 8.78	U 1.00	U 4.69	NA	U 1.06	NA	U 1.00
CHROMIUM	950	NA	266	7	133	NA	18	NA	16
LEAD	375	NA	150	12	164	NA	24	NA	49
MERCURY	60	NA	0	U 0.048	0	NA	0	NA	0
SELENIUM	950	NA	U 8.8	U 1.0	U 4.7	NA	U 1.1	NA	U 1.0
SILVER	950	NA	U 1.5	U 1.5	U 1.5	NA	U 1.6	NA	U 1.5
<b>PCBs (ug/kg)</b>									
AROCLOR-1016	100	NA	NA	NA	NA	NA	NA	NA	NA
AROCLOR-1221	*	NA	NA	NA	NA	NA	NA	NA	NA
AROCLOR-1232	*	NA	NA	NA	NA	NA	NA	NA	NA
AROCLOR-1242	*	NA	NA	NA	NA	NA	NA	NA	NA
AROCLOR-1248	*	NA	NA	NA	NA	NA	NA	NA	NA
AROCLOR-1254	*	NA	NA	NA	NA	NA	NA	NA	NA
AROCLOR-1260	*	NA	NA	NA	NA	NA	NA	NA	NA
Total PCBs (sum of above)	2,200	NA	NA	NA	NA	NA	NA	NA	NA
<b>VOCs (ug/kg)</b>									
METHYLENE CHLORIDE	13,000	17	NA	NA	NA	7	NA	10	NA
TRICHLOROFLUOROMETHANE	*	190	NA	NA	NA	70	NA	68	NA
<b>Other Compounds</b>									
TOTAL SOLIDS (%)	*	73	92	84	88	74	84	80	90

Notes:

- \* Regulatory Guideline Not Available
- Bold values indicate an exceedance of the Regulatory Guideline
- PCBs = Polychlorinated Biphenyls
- VOCs = Volatile Organic Compounds
- NA = Not Analyzed

VIL\_RESP04094

7 Depot Street  
Windham, Maine  
Soil Analytical Results

Analyte	Maine DEP	TP-111	TP-112	HA-1	HA-2	HA-4	HA-5	HA-6	SS1
Depth of Sample	Residential	2-4'	0-2'	0-0.3'	0-0.3'	1-2'	0.5-1'	0-0.3'	0-0.5'
Date Collected	Guideline	8/4/2003	8/4/2003	8/4/2003	8/4/2003	8/4/2003	8/8/2003	8/4/2003	11/25/2003
<b>DRO (mg/kg)</b>									
DIESEL RANGE ORGANICS		29	NA	63	NA	2,900	3,300	9,100	NA
<b>Metals (mg/kg)</b>									
ARSENIC	10	NA	22	NA	NA	NA	NA	NA	NA
BARIUM	10,000	NA	251	NA	NA	NA	NA	NA	NA
CADMIUM	27	NA	U 2.21	NA	NA	NA	NA	NA	NA
CHROMIUM	950	NA	55	NA	NA	NA	NA	NA	NA
LEAD	375	NA	338	NA	NA	NA	NA	NA	NA
MERCURY	60	NA	1	NA	NA	NA	NA	NA	NA
SELENIUM	950	NA	U 2.2	NA	NA	NA	NA	NA	NA
SILVER	950	NA	U 1.6	NA	NA	NA	NA	NA	NA
<b>PCBs (ug/kg)</b>									
AROCLOR-1016	100	NA	NA	U 20	U 20	U 18	U 200	NA	U 39.0
AROCLOR-1221	*	NA	NA	U 20	U 20	U 18	U 200	NA	U 39.0
AROCLOR-1232	*	NA	NA	U 20	U 20	U 18	U 200	NA	U 39.0
AROCLOR-1242	*	NA	NA	U 20	U 20	99	U 200	NA	U 39.0
AROCLOR-1248	*	NA	NA	U 20	U 20	U 18	U 200	NA	U 39.0
AROCLOR-1254	*	NA	NA	79	56	530	24,000	NA	89.9
AROCLOR-1260	*	NA	NA	40	U 20	U 18	12,000	NA	U 39.0
Total PCBs (sum of above)	2,200	NA	NA	119	56	629	36,000	NA	90
<b>VOCs (ug/kg)</b>									
METHYLENE CHLORIDE	13,000	U6	NA	NA	NA	NA	NA	6	NA
TRICHLOROFLUOROMETHANE	*	61	NA	NA	NA	NA	NA	48	NA
<b>Other Compounds</b>									
TOTAL SOLIDS (%)	*	84	79	85	83	93	84	96	83.6

Notes:

\* Regulatory Guideline Not Available

Bold values indicate an exceedance of the Regulatory Guideline

PCBs = Polychlorinated Biphenyls

VOCs = Volatile Organic Compounds

NA = Not Analyzed

VIL\_RESP04095

7 Depot Street  
Windham, Maine  
Soil Analytical Results

Analyte	Maine DEP	SS2	SS3	SS5	SS6	SS7	SS8	SS9
Depth of Sample	Residential	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'
Date Collected	Guideline	11/25/2003	11/25/2003	11/25/2003	11/25/2003	11/25/2003	11/25/2003	11/25/2003
<b>DRO (mg/kg)</b>								
DIESEL RANGE ORGANICS		NA	NA	NA	NA	NA	NA	NA
<b>Metals (mg/kg)</b>								
ARSENIC	10	NA	NA	NA	NA	NA	NA	NA
BARIUM	10,000	NA	NA	NA	NA	NA	NA	NA
CADMIUM	27	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	950	NA	NA	NA	NA	NA	NA	NA
LEAD	375	NA	NA	NA	NA	NA	NA	NA
MERCURY	60	NA	NA	NA	NA	NA	NA	NA
SELENIUM	950	NA	NA	NA	NA	NA	NA	NA
SILVER	950	NA	NA	NA	NA	NA	NA	NA
<b>PCBs (ug/kg)</b>								
AROCLOR-1016	100	U 36.1	U 40	U 39.2	U 48.2	U 33.1	U 54.6	3,210
AROCLOR-1221	*	U 36.1	U 40	U 39.2	U 48.2	U 33.1	U 54.6	U 47.6
AROCLOR-1232	*	U 36.1	U 40	U 39.2	U 48.2	U 33.1	U 54.6	U 47.6
AROCLOR-1242	*	U 36.1	U 40	U 39.2	U 48.2	U 33.1	U 54.6	U 47.6
AROCLOR-1248	*	U 36.1	U 40	U 39.2	U 48.2	U 33.1	U 54.6	U 47.6
AROCLOR-1254	*	500	U 40	44,800	120,000	13,100	11,200	9,590
AROCLOR-1260	*	317	U 40	32,200	53,500	U 33.1	U 54.6	3,540
Total PCBs (sum of above)	2,200	817		77,000	173,500	13,100	11,200	16,340
<b>VOCs (ug/kg)</b>								
METHYLENE CHLORIDE	13,000	NA	NA	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	*	NA	NA	NA	NA	NA	NA	NA
<b>Other Compounds</b>								
TOTAL SOLIDS (%)	*	83	81.2	80.8	68.5	95.5	90.3	90.4

Notes:

\* Regulatory Guideline Not Available

Bold values indicate an exceedance of the Regulatory Guideline

PCBs = Polychlorinated Biphenyls

VOCs = Volatile Organic Compounds

NA = Not Analyzed

VIL\_RESP04096

7 Depot Street  
Windham, Maine  
Soil Analytical Results

Analyte	Maine DEP	SS10	SS11	SS12	SS13	SS14	SS15	SS101
Depth of Sample	Residential	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0-0.5'	0.5-1.0'	fl. drain
Date Collected	Guideline	11/25/2003	11/25/2003	11/25/2003	11/25/2003	11/25/2003	11/25/2003	1/13/2004
<b>DRO (mg/kg)</b>								
DIESEL RANGE ORGANICS		NA	NA	NA	NA	NA	NA	NA
<b>Metals (mg/kg)</b>								
ARSENIC	10	NA	NA	NA	NA	NA	NA	17.5
BARIUM	10,000	NA	NA	NA	NA	NA	NA	126
CADMIUM	27	NA	NA	NA	NA	NA	NA	<0.651
CHROMIUM	950	NA	NA	NA	NA	NA	NA	158
LEAD	375	NA	NA	NA	NA	NA	NA	109
MERCURY	60	NA	NA	NA	NA	NA	NA	<0.243
SELENIUM	950	NA	NA	NA	NA	NA	NA	<3.91
SILVER	950	NA	NA	NA	NA	NA	NA	<2.61
<b>PCBs (ug/kg)</b>								
AROCLOR-1016	100	U 43.9	U 32.2	U 32.5	U 35.1	<b>499</b>	222	<4410
AROCLOR-1221	*	U 43.9	U 32.2	U 32.5	U 35.1	U 43.8	U 37.2	<4410
AROCLOR-1232	*	U 43.9	U 32.2	U 32.5	U 35.1	U 43.8	U 37.2	<4410
AROCLOR-1242	*	U 43.9	U 32.2	U 32.5	U 35.1	U 43.8	U 37.2	<4410
AROCLOR-1248	*	U 43.9	U 32.2	U 32.5	U 35.1	U 43.8	U 37.2	<4410
AROCLOR-1254	*	5,100	U 32.2	U 32.5	135	1770	1170	262,000
AROCLOR-1260	*	U 43.9	U 32.2	U 32.5	U 35.1	532	445	<4410
Total PCBs (sum of above)	2,200	5,100			135	<b>2,801</b>	1,837	262,000
<b>VOCs (ug/kg)</b>								
METHYLENE CHLORIDE	13,000	NA	NA	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	*	NA	NA	NA	NA	NA	NA	NA
<b>Other Compounds</b>								
TOTAL SOLIDS (%)	*	88.9	92.2	95.3	98.2	84.2	90.5	70.9

Notes:

\* Regulatory Guideline Not Available

Bold values indicate an exceedance of the Regulatory Guideline

PCBs = Polychlorinated Biphenyls

VOCs = Volatile Organic Compounds

NA = Not Analyzed

VIL\_RESP04097

7 Depot Street  
Windham, Maine  
Soil Analytical Results

Analyte	Maine DEP	SS101 (dup)	SS102	SS103	SS104	SS105	SS106	SS107
Depth of Sample	Residential	fl. drain	soil on fl.	soil on fl.	soil on fl.	1'	1.5'	1.3'
Date Collected	Guideline	1/13/2004	1/13/2004	1/13/2004	1/13/2004	1/13/2004	1/13/2004	2/3/2004
<b>DRO (mg/kg)</b>								
DIESEL RANGE ORGANICS		NA	NA	NA	NA	NA	NA	NA
<b>Metals (mg/kg)</b>								
ARSENIC	10	NA	NA	NA	NA	13.6	NA	NA
BARIUM	10,000	NA	NA	NA	NA	73.4	NA	NA
CADMIUM	27	NA	NA	NA	NA	<0.714	NA	NA
CHROMIUM	950	NA	NA	NA	NA	32	NA	NA
LEAD	375	NA	NA	NA	NA	212	NA	NA
MERCURY	60	NA	NA	NA	NA	0.25	NA	NA
SELENIUM	950	NA	NA	NA	NA	<4.28	NA	NA
SILVER	950	NA	NA	NA	NA	<2.86	NA	NA
<b>PCBs (ug/kg)</b>								
AROCLOR-1016	100	<31,000	<6680	<29,800	<29,900	NA	<40,900	<2300
AROCLOR-1221	*	<31,000	<6680	<29,800	<29,900	NA	<40,900	<2300
AROCLOR-1232	*	<31,000	<6680	<29,800	<29,900	NA	<40,900	<2300
AROCLOR-1242	*	<31,000	<6680	<29,800	<29,900	NA	<40,900	<2300
AROCLOR-1248	*	<31,000	<6680	<29,800	<29,900	NA	<40,900	<2300
AROCLOR-1254	*	570,000	71,100	138,000	100,000	NA	113,000	120,000
AROCLOR-1260	*	<31,000	<6680	<29,800	<29,900	NA	<40,900	<2300
Total PCBs (sum of above)	2,200	570,000	71,100	138,000	100,000	NA	113,000	120,000
<b>VOCs (ug/kg)</b>								
METHYLENE CHLORIDE	13,000	NA	NA	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	*	NA	NA	NA	NA	NA	NA	NA
<b>Other Compounds</b>								
TOTAL SOLIDS (%)	*	54.9	92.6	94.9	90.9	68.2	67.1	73.4

Notes:

\* Regulatory Guideline Not Available

Bold values indicate an exceedance of the Regulatory Guideline

PCBs = Polychlorinated Biphenyls

VOCs = Volatile Organic Compounds

NA = Not Analyzed

VIL\_RESP04098



7 Depot Street  
Windham, Maine  
Soil Analytical Results

Analyte	Maine DEP	SS108
Depth of Sample	Residential	0.9'
Date Collected	Guideline	2/3/2004
<b>DRO (mg/kg)</b>		
DIESEL RANGE ORGANICS		NA
<b>Metals (mg/kg)</b>		
ARSENIC	10	NA
BARIUM	10,000	NA
CADMIUM	27	NA
CHROMIUM	950	NA
LEAD	375	NA
MERCURY	60	NA
SELENIUM	950	NA
SILVER	950	NA
<b>PCBs (ug/kg)</b>		
AROCLOR-1016	100	<140
AROCLOR-1221	*	<140
AROCLOR-1232	*	<140
AROCLOR-1242	*	<140
AROCLOR-1248	*	<140
AROCLOR-1254	*	9,300
AROCLOR-1260	*	<140
Total PCBs (sum of above)	2,200	9,300
<b>VOCs (ug/kg)</b>		
METHYLENE CHLORIDE	13,000	NA
TRICHLOROFLUOROMETHANE	*	NA
<b>Other Compounds</b>		
TOTAL SOLIDS (%)	*	61.8

Notes:

\* Regulatory Guideline Not Available

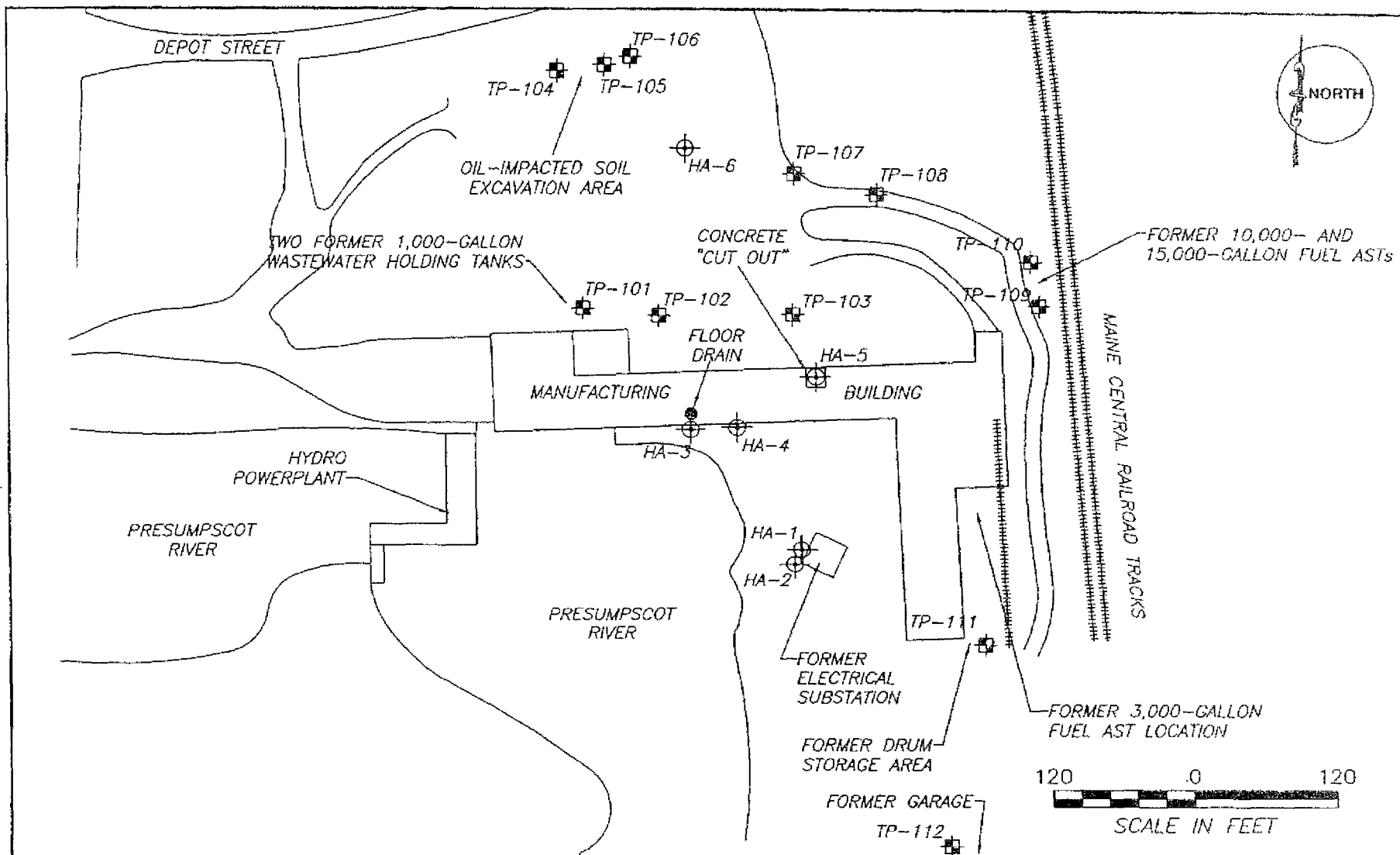
Bold values indicate an exceedance of the Regulatory Guideline

PCBs = Polychlorinated Biphenyls



VOCs = Volatile Organic Compounds

NA = Not Analyzed

VIL\_RESP04099



### Legend

-  - HAND AUGER LOCATION
-  - TEST PIT LOCATION



JACQUES WHITFORD LOCATION:  
PORTLAND, MAINE

DATE PREPARED: 9-02-03	DESIGNED BY: DVC	DRAWN BY: TS	CHECKED BY: BSB	REVIEWED BY: DVC
REVISION DATE:	REVISION NO:	DRAWN BY:	CHECKED BY:	REVIEWED BY:

PROJECT NAME/TITLE NAME: 7 DEPOT STREET/SITE	PROJECT NUMBER/PHASE: MEP03102/*	SCALE: 1"=120'
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Jacques Whitford Company, Inc.

DRAWING TITLE:

**SITE PLAN**  
SEVEN DEPOT STREET  
WINDHAM, MAINE

PREPARED FOR:  
RENEE LEWIS

FIGURE NO.

**2**

**VIL\_RESP04100**



## **SECTION 6**

### **VISUAL QUALITY & SCENIC CHARACTER**

The visual quality and scenic character of the community will be greatly improved as a result of the proposed development. The dilapidated industrial building will be removed from the site and the riverbank will be restored to a natural vegetative state. In addition, the development was designed to match the "village like" character of the surrounding neighborhood.



## **ATTACHMENT 8**

### **EROSION CONTROL PLAN**

Please refer to the attached Erosion Control Report for information regarding the erosion and sedimentation control measures proposed for this project. Additional erosion control plan information, notes, and details are included in the attached planset.

# **EROSION CONTROL REPORT**

## **VILLAGE AT LITTLE FALLS**

Route 202  
Tax Map 38, Parcels 6&7  
Windham, Maine

Prepared For:  
HRC – Village at Little Falls, LLC  
2 Market Street  
Portland, Maine 04101

**March 2007**



Prepared by:  
Northeast Civil Solutions, Inc.  
153 U.S. Route 1  
Scarborough, ME 04074

**VIL\_RESP04105**

## 1.0 INTRODUCTION

The proposed Village at Little Falls development consists of 85 new residential condominium units with associated paved streets, landscaping, driveways, utilities, and stormwater management infrastructure. The project will include two 12-unit apartment buildings, nine duplexes, nine porch style units, 33 townhouse units, and a single-family residence. The 8.03-acre property is located in Windham, Maine at the corner of Route 202 and Depot Street. The property has approximately 370 feet of frontage on the Presumpscot River.

The following soils are present on site:

- Cu – Undorthents – Hydrologic Soil Group C
- HrB – Hollis Fine Sandy Loam – Hydrologic Soil Group C
- Py – Podunk Fine Sandy Loam – Hydrologic Soil Group B
- HfD2 – Hartland Very Fine Sandy Loam – Hydrologic Soil Group B
- Sn – Scantic Silt Loam – Hydrologic Soil Group D

The soils were classified by the US Soil Conservation Service during a soil survey of Cumberland County.

## 2.0 STRUCTURAL MEASURES

The following structural measures will be used to control the erosion and sedimentation during and after construction. Please refer to the attached planset for additional erosion control requirements.

**Silt Fences:** Silt fences will be installed at the downgradient side of all cut and fill locations, in unstabilized drainage ways, and in additional areas where dictated by field conditions. On slopes, silt fencing will be installed along the contour. Silt fences will be installed on all disturbed slopes steeper than 10 horizontal to one vertical. For earth cut slopes, the silt fences will also be installed immediately uphill and also downhill of the cut. Silt fences will be installed immediately below all diversion ditches.

**Riprap:** Materials for aprons and pipe outlet protection was selected to attenuate the erosive forces of stormwater runoff. Riprap is proposed for steep slopes and for the specific areas shown on the Erosion Control Plan found in the attached planset.

**Erosion Control Fabric:** Futerra Erosion Control Matting (or an approved equal) will be placed on all grassed swales, and in all areas of permanent or temporary concentrated flows of surface water.

**Mulch and Netting:** Anchored matting (mulch and netting) shall be installed at the base and along the sides of all proposed or existing grassed swales disturbed by construction activities, on slopes greater than 5%, and all on-site disturbed areas not to be worked within 7 days. During the growing season, all seeded areas shall be mulched using hay or straw that is air-dried, and free of undesirable seeds and coarse materials, at an application rate of 100 pounds per 1,000 square feet. Mulch shall lightly cover at least



90% of the surface. Mulch shall be four (4) inches thick if applied during the non-growing period. This four-inch layer of mulch shall be removed once the dormant period has ended and the growing season has begun. The netting shall be installed such that a firm, continuous contact occurs between the mat and the soil.

**Hay Bale Dams:** The hay bales will be anchored with hardwood stakes. Hay bale dams are appropriate in areas where the velocities are less than 2 feet/sec and slopes are less than 1%.

**Stormwater Diversion:** Surface water shall be diverted away from all bare, exposed slopes, and all areas disturbed during construction. The methods for diverting surface water shall not concentrate flow, nor cause damage to existing areas. Diversion ditches shall be seeded or rip-raped to prevent the erosion of soil, and shall be constructed on the uphill side of the disturbed areas.

**Dust Control:** All vehicle traffic areas and exposed surfaces shall be moistened periodically with adequate water to control dust. Calcium chloride may be used in loose dry granules or flakes fine enough to feed through a spreader at a rate that will keep surfaces moist, but does not cause pollution nor plant damage.

**Construction Road:** Stone construction road shall be constructed after all silt fencing and other control measures have been installed, and prior to any excavation activities on the site. The construction road is intended to provide a stable vehicle surface, and to limit the tracking of soils off-site on vehicle tires.

**Slope Stability:** All slopes shall be inspected frequently for signs of failure, slipping, and/or erosion. Any damage shall be repaired immediately. Should recurrent problems develop, filter fabric and a six-inch layer of riprap and /or Futerra erosion control matting shall be installed to stabilize the specific area.

**River Bank Restoration:** Brush Mattress and Wattling will be used in the restoration of the riverbank after the existing mill building is removed. Two inch thick coconut fiber matting with live willow stakes will be installed in the restoration area. Below the water line, two layers of 12"x12"x36" rocks will be placed along the riverbed for stabilization.

**Temporary Cofferd Dam:** A cofferdam will be constructed in the Presumpscot River to facilitate the bank cleanup and restoration. The dam will be removed after the restoration activities are completed. Please refer to the attached planset for cofferdam specifications and requirements.

**Problem Areas:** While it is expected that the above measures will limit and control the erosion of soil, and the instability of slopes and vegetation, additional measures may be required. Problem areas shall receive riprap and /or Futerra erosion control matting, as necessary to control erosion.